

**MISSION BAY &
LA JOLLA WATERSHED
URBAN RUNOFF MANAGEMENT PLAN

JANUARY 2008**



**Storm Water Pollution Prevention Division
General Services Department
City of San Diego**

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Statement of Certification

**RE: STATEMENT OF CERTIFICATION for the
Mission Bay & La Jolla Watershed Urban Runoff Management Plan**

I certify under penalty of law that the Mission Bay & La Jolla Watershed Urban Runoff Management Plan was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment for knowing violations.

ANDREW KLEIS

Acting Deputy Director
Storm Water Pollution Prevention Division
General Services Department
City of San Diego

Date

Executive Summary

Introduction

The purpose of the Mission Bay & La Jolla Watershed Urban Runoff Management Plan (WURMP) is to guide the efforts of the City of San Diego (City), led by the Storm Water Pollution Prevention Division in the General Services Department, to protect and improve the surface water quality of Mission Bay, the La Jolla coast, San Clemente Creek, Rose Creek, and Tecolote Creek. More specifically, the WURMP addresses issues related to surface water quality within the Mission Bay & La Jolla Watershed Management Area (WMA) that can be potentially attributed (wholly or partially) to discharges from the municipal separate storm sewer system (MS4), which is also referred to as the storm drain system. Urban runoff, either from precipitation or human activity, conveys pollutants through the MS4 and directly into local water bodies, contributing significantly to their degradation.

The WURMP also addresses the requirements associated with San Diego Regional Water Quality Control Board Order No. R9-2007-0001, National Pollutant Discharge Elimination System Permit No. CAS0108758¹ (Municipal Permit). The Municipal Permit was re-issued on January 24, 2007, and has a five-year life. The San Diego City Council adopted this WURMP on January 7, 2008, and the effective implementation start date is March 24, 2008.

Furthermore, the WURMP addresses other regulatory requirements affecting the WMA, including those associated with Area of Special Biological Significance (ASBS) protection and anticipated Total Maximum Daily Loads (TMDLs). The City's philosophy is to approach these regulations and the Municipal Permit comprehensively, proactively, and in a coordinated fashion to maximize resources and efficiency in meeting their shared aim.

The primary goal of the WURMP is to positively affect the water quality of the Mission Bay & La Jolla WMA while balancing economic, social, and environmental constraints. The following objective and sub-objectives have been identified by the City to achieve this goal:

- Implement best suite of efficiency-optimized activities to achieve maximum load reductions with available resources by:
 - Targeting sources/causes of identified priority water quality problems strategically
 - Gathering data necessary to determine the efficiency of load reduction activities
 - Optimizing the efficiency of activities in addressing priority water quality problems

Watershed Strategy

In spring 2006, the City initiated efforts to proactively address present and anticipated TMDL, ASBS protection, and Municipal Permit WURMP requirements using an integrated approach to maximize resources and efficiency. These efforts are described in the *Strategic Plan for*

¹ http://www.swrcb.ca.gov/rwqcb9/programs/sd_stormwater.html

Watershed Activity Implementation (November 2007) (Strategic Plan)², the preparation of which involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers to determine the priority water quality problems for the City's WMAs and geospatially prioritize the City's portion of each of those WMAs for activity implementation.

Water Quality Assessment

To assess yearly the water quality of the WMAs, the Copermittees have been compiling the *San Diego County Municipal Copermittees Urban Runoff Monitoring Report* (Annual Monitoring Report). The Annual Monitoring Report presents data and findings from the various Regional Monitoring, Core Monitoring, and Process Studies programs implemented throughout the region by the Copermittees. Based on the data and findings of the Annual Monitoring Report and the City's Strategic Plan, the City has determined to focus its efforts on targeting the following Priority Water Quality Problems for the Mission Bay & La Jolla WMA. The problems that are bolded and italicized are considered High Priority Water Quality Problems.

- ***Bacteria/Pathogens***
- ***Heavy Metals***
- ***Nutrients***
- Pesticides
- Sediment

Plan of Action

To address the identified Priority Water Quality Problems—and in particular the High Priority Water Quality Problems—the City has developed a five-year plan of action using its Strategic Plan, which is presented in this WURMP. The plan of action outlines various activity types, including: water quality, education, special studies, public participation, and watershed-based land use planning. Water quality activities range from trash cleanup sponsorships, to facility inspections, to targeted street sweeping, to right-of-way porous asphalt pilot projects. Education activities range from public service announcements, to outdoor advertisements and direct outreach, to Community-Based Social Marketing pilot study efforts. The City also has a plan to continue to encourage the participation and input of diverse stakeholders and the general public in the development, implementation, and assessment of the Mission Bay & La Jolla WURMP through various means, such as the Think Blue website³, outreach to established committees and commissions, and partnerships with local not-for-profit groups. As for watershed-based land use planning, the City anticipates using the community plan update process to incorporate general urban runoff management principles into the relevant plans, as needed, to address special concerns identified for the Mission Bay & La Jolla WMA.

² <http://www.sandiego.gov/thinkblue/programreports/index.shtml>

³ <http://www.thinkbluesd.org>

Effectiveness Assessment

To evaluate its efforts at the activity and program levels, the City has developed an assessment framework that emphasizes maximization of activity efficiency and obtainment of knowledge and data associated with activity efficiency. This will help guide future management decisions on how to best allocate the City's resources to obtain the maximum amount of pollutant load reduction from its efforts. The City defines efficiency as pollutant load reduction divided by implementation cost. Individual activities are evaluated such that the necessary data collected allow for the calculation of their efficiency and for conclusions as to whether or not management goals and objectives have been met. Knowledge gained then feeds into subsequent management decisions regarding future allocation of resources. Assessment is part of the iterative approach of planning, implementation, and assessment, in which findings from the assessment feed into planning and implementation to continually improve the program and individual activities.

Conclusions

The City will continue to refine and augment the Mission Bay & La Jolla WURMP as it improves its understanding of the complex issues affecting the WMA in a continued effort to improve its effectiveness in protecting and improving water quality. Such refinement and augmentation are supported by the iterative process used to develop and implement the WURMP, which establishes mechanisms for stakeholders to evaluate priorities, improve coordination, assess program goals, and allocate finite resources in a cost-effective manner.

Adaptive management is key to making the iterative process work. Adaptive management allows adjustments in management direction as new information becomes available. The combination of natural variability in the hydrologic cycle and the uncertainty associated with a complex system requires that watershed managers be flexible enough to modify implementation approaches based on progress and available information. Watershed characteristics, sources of pollutants, and management approaches are unique, and, therefore, management efforts may not proceed exactly as planned. Adaptive management does not mean that the watershed's water quality goals would be modified based upon lack of progress, but that the results would be used to modify management policies, strategies, practices, and operation and maintenance procedures to reach goals.

In short, the Mission Bay & La Jolla WURMP presents the City's long-term efforts to protect and enhance the water quality of the WMA using a watershed-based approach. The WURMP will continue to be developed with stakeholder participation and be integrated with other non-City projects, as appropriate.

Section 1 Introduction

1.1 *Framework*

This section introduces the purpose, goals, objectives, and efforts of the City of San Diego (City) to protect and improve the surface water quality of the Mission Bay & La Jolla Watershed Management Area (WMA).

1.1.1 Program Purpose

The purpose of the Mission Bay & La Jolla Watershed Urban Runoff Management Program (WURMP) is to guide the City's efforts to protect and improve the surface water quality of Mission Bay, the La Jolla coast, San Clemente Creek, Rosé Creek, Tecolote Creek, and the Pacific Ocean shoreline. More specifically, the WURMP addresses issues related to surface water quality within the Mission Bay & La Jolla WMA that can be potentially attributed (wholly or partially) to discharges from the municipal separate storm sewer system (MS4), which is also referred to as the storm drain system. Urban runoff, either from precipitation or human activity, conveys pollutants through the MS4 and directly into local water bodies, contributing significantly to their degradation.

1.1.2 Program Development

Development of the WURMP is based on an iterative process of data collection and analysis, program planning, activity implementation, and activity and program assessment. The City, both by itself and in cooperation with other jurisdictions in the region, collects and analyzes data pertaining to water quality and pollutant sources to determine and prioritize the prevalent problems in the WMA, the sources or causes of those problems, and the site of those problems. Using this information, the City then identifies, plans, and implements activities to effectively address the worst problems in the most critical areas of the WMA. These activities are assessed for their effectiveness in conjunction with assessment of the WURMP as a whole on a periodic basis. The City adds the assessment data to the updated water quality and pollutant source data to refine its future WURMP management decisions and efforts.

The Storm Water Pollution Prevention Division (Storm Water Division) in the General Services Department leads the City's efforts to reduce urban runoff pollution. It consists of staff from various disciplines working together to develop and implement the WURMP. In addition to City staff, stakeholders participate regularly in activity planning and implementation efforts regularly via meetings at the City or at stakeholder locales. Because the City is the only Copermitttee within the WMA, internal and stakeholder meetings are held on an ad hoc basis.

1.1.3 Order No. R9-2007-0001

The WURMP closely adheres to Section E of San Diego Regional Water Quality Control Board Order No. R9-2007-0001, National Pollutant Discharge Elimination System Permit No.

CAS0108758¹ (Municipal Permit). Section E (and other sections) of the Municipal Permit outlines a vision for managing urban runoff pollution at the watershed level, which includes:

- Identifying the WMA's high priority water quality problems and their sources/causes
- Conducting an annual assessment of the WMA's water quality
- Characterizing the sources/causes of the WMA's high priority water problems
- Planning, implementing, and assessing activities to address the WMA's high priority water quality problems and their sources
- Collaborating with other jurisdictions in the WMA to address the high priority water quality problems and their sources/causes
- Assessing the effectiveness of the WURMP as a whole
- Coordinating and integrating Total Maximum Daily Load (TMDL) efforts into WURMP efforts

1.1.4 Program Goal and Objectives

The primary goal of the WURMP is to positively affect the water quality of the Mission Bay & La Jolla WMA while balancing economic, social, and environmental constraints. The following objective and sub-objectives have been identified by the City to achieve this goal:

- Implement best suite of efficiency-optimized activities to achieve maximum load reductions with available resources by
 - ✓ Targeting sources/causes of identified priority water quality problems strategically
 - ✓ Gathering data necessary to determine the efficiency of load reduction activities
 - ✓ Optimizing the efficiency of activities in addressing priority water quality problems

1.2 Watershed Description

This section describes the Mission Bay & La Jolla WMA to contextualize the City's efforts to protect and improve the surface water quality of the WMA.

1.2.1 Geography

The geography of the Mission Bay & La Jolla WMA features: four main water bodies; canyons and wildlife preserves; a coastline with steep bluffs and sandy and rocky beaches; salt marshes; mesas; and desert. San Clemente Creek, Rose Creek, and Tecolote Creek flow into Mission Bay. Mission Bay itself is a system of islands, peninsulas, beaches, remnant salt marshes, and a navigable inlet to the Pacific Ocean, whose current configuration is largely the result of dredging of tidal salt marshes and mudflats. Wildlife preserves include the Tecolote Canyon Natural Park, the Rose Canyon Open Space Preserve, the Marian Bear Memorial Natural Park, and the Kendall-Frost Mission Bay Marsh Reserve. Steep bluffs line the La Jolla coast as well as both sandy and rocky beaches. Mesas can be found in the University of California, San Diego area

¹ http://www.swrcb.ca.gov/rwqcb9/programs/sd_stormwater.html

and surrounding communities. Desert habitat is featured in the Miramar Marine Corps Air Station area.

1.2.2 Biology

Mission Bay provides habitat for numerous sensitive species indigenous to the Southern California coastline and is home to several wildlife preserves that provide important habitat for the federally endangered least tern, brown pelican, and light-footed clapper rail. Tecolote Canyon Natural Park, the Rose Canyon Open Space Preserve, the Marian Bear Memorial Natural Park, and the Kendall-Frost Mission Bay Marsh Reserve also provide habitat for a variety of both animal and plant species, including riparian and chaparral vegetation, such as willows and coastal sage scrub.

1.2.3 Hydrology and Beneficial Uses

The Mission Bay & La Jolla WMA is the smallest WMA in the San Diego region with a land area of over 43,000 acres. It is fully within the jurisdiction of the City. Three hydrologic areas (HA) form the WMA:

- Scripps HA (906.3)
- Miramar HA (906.4)
- Tecolote HA (906.5)

Together with the Miramar Reservoir HA (906.1) and the Poway HA (906.2), the Mission Bay & La Jolla WMA forms the Peñasquitos Hydrologic Unit (906.0).

The Miramar and Tecolote HAs drain directly into Mission Bay via Rose and Tecolote creeks, respectively. The Scripps HA drains into the Pacific Ocean along the coastlines of the communities of Pacific Beach and La Jolla.

The Water Quality Control Plan for the San Diego Basin (Basin Plan) lists the following existing and potential beneficial uses for the main water bodies of the WMA:

- Mission Bay: IND, REC1, REC2, COMM, EST, WILD, RARE, MAR, MIGR, SPWN, SHELL
- Rose Creek: IND, REC1, REC2, WARM, WILD
- Tecolote Creek: REC1, REC2, WARM, WILD
- San Clemente Creek: IND, REC1, REC2, WARM, COLD, WILD, RARE, SPWN
- Pacific Ocean Shoreline: IND, NAV, REC1, REC2, COMM, BIOL, WILD, RARE, MAR, AQUA, MIGR, SPWN, SHELL

1.2.4 Land Use

The Mission Bay & La Jolla WMA contains some of the more intensely urbanized areas of San Diego County (the San Diego Association of Governments estimated the population of the WMA to be 226,446 in 2000). Residential uses predominate in the Scripps and Tecolote HAs

and in the southern portion of the Miramar HA. The Miramar Marine Corps Air Station and the University of California, San Diego, occupy the northern portion of the Miramar HA. Mission Bay, the largest aquatic park along the western coast of the United States, is the outstanding land use at the southwestern corner of the WMA. It supports a variety of recreational uses and a small amount of remnant salt marshes. Commercial and industrial land uses are clustered generally along Interstate 5 and in the Golden Triangle area (bounded by Interstate 805, Interstate 5, and State Route 52). Wildlife preserves and parks run along San Clemente, Rose, and Tecolote creeks.

Table I-1 below summarizes the land uses in the WMA in terms of acreage and percentage of the WMA as a whole.

Table I-1. Mission Bay & La Jolla WMA Land Uses².

Land Use Categories	Acreage	Percentage of WMA
Agriculture	80	0.22%
Commercial	1,301	3.55%
Industrial	1,580	4.31%
Military	2,126	5.80%
Open Space/Open Water	11,269	30.72%
Parks/Recreation	2,064	5.63%
Public	607	1.65%
Residential	8,422	22.96%
Roads	5,429	14.80%
Schools	1,248	3.40%
Undeveloped	2,553	6.96%
Total	36,678	100.00%

1.2.5 Jurisdictions

The Mission Bay & La Jolla WMA is fully within the City's jurisdiction; therefore, the City is the only Copermittee within the WMA. However, significant military presence is located in the eastern part of the WMA as well as the University of California, San Diego in La Jolla. Maps are included in Appendix D for reference. These maps include the following features within the WMA to facilitate activity planning and implementation efforts:

- Receiving waters
- Clean Water Act Section 303(d) impaired receiving waters
- Land uses
- MS4
- Major highways
- Inventories commercial, industrial, and municipal sites

² Sources include SANDAG Year 2000 digital imagery and City of San Diego water utilities digital orthophotos, jurisdictional land use data, and various secondary sources used to verify land use interpretations. Data were tabulated by SANDAG as a courtesy to Municipal Permit Copermittees.

Section 2 Watershed Strategy

In Spring 2006, the City initiated efforts to proactively address present and anticipated Total Maximum Daily Load (TMDL), Area of Special Biological Significance (ASBS) protection, and Municipal Permit WURMP requirements using an integrated approach to maximize resources and achieve efficiencies. The result of these efforts has been the *Strategic Plan for Watershed Activity Implementation* (July 2007) (Strategic Plan)¹, the preparation of which involved reviewing and assessing available monitoring and source data, land use data, and current and anticipated regulatory drivers to determine the priority water quality problems for the WMAs that the City has jurisdiction in and geospatially prioritize the City's portion of each of those WMAs, using best professional judgment, for activity implementation.

Subsequent to the adoption of the Municipal Permit in January 2007, the Copermittees developed a Model Watershed Strategy to help guide their planning, implementation, and assessment efforts in the various WMAs. The Model Watershed Strategy assists the Copermittees in: prioritizing areas within each WMA; selecting and prioritizing appropriate watershed activities; monitoring and pollutant source identification studies for each of the prioritized areas; and identifying data gaps with regards to monitoring and pollutant sources, which need to be filled to enable more refined future management decisions.

Although developed independently of each other, the City's Strategic Plan and the Copermittees' Model Watershed Strategy share the approach of reviewing the best available data (e.g., water quality and pollutant source data) and analyzing them geospatially to make management decisions regarding: (1) water quality problems to target and activities to implement; and (2) geospatial prioritization of the WMAs for focused activity implementation.

This section summarizes the City's Strategic Plan, which was used to determine the High Priority Water Quality Problems and watershed activities to implement within the Mission Bay & La Jolla WMA. Note that the Strategic Plan is primarily an activity implementation approach. However, the conclusions that it makes regarding priority water quality problems are in harmony with the conclusions made in the Section 3, Water Quality Assessment, of this WURMP.

2.1 Geographic Prioritization

The Strategic Plan divided the City's portion of each of the WMAs in which it has jurisdiction into priority sectors. The prioritization was based on a combined geospatial analysis of historical water quality monitoring data, pollutant source data from the Baseline Long-Term Effectiveness Assessment (BLTEA), and land use data. In short, areas that had historical water quality problems and high concentrations of pollutant sources were considered a higher priority for implementing activities versus areas that had relatively less water quality problems and lower concentrations of pollutant sources. Furthermore, areas that had or were likely to have TMDLs and/or ASBS protection requirements in development were considered higher priority than those that did or were unlikely to have so. Opportunities and space for activity implementation also raised the priority of areas.

¹ <http://www.sandiego.gov/thinkblue/programreports/index.shtml>

The purpose of the prioritization was to guide management decisions in terms of where to implement watershed activities. Implementing activities in the most problematic areas and where multiple regulations would be addressed simultaneously would help management maximize the efficiency of its efforts.

The geographic prioritization process also simultaneously resulted in identifying: (1) priority water quality problems to target; (2) priority sources to target; and (3) data gaps to address. Priority water quality problems were identified when the Strategic Plan analyzed data regarding water quality problems historically and geospatially and within the context of current and pending regulatory requirements. The geospatial analysis identified the pollutant source clusters to target, which entailed and pointed to further investigation of those sources for better implementation of activities.

Note that water quality problems for the Mission Bay & La Jolla WMA are presented in Section 3.3. Likely pollutant sources in the WMA are presented in Section 3.4.

2.2 Activity Prioritization

In addition to geographic prioritization, the City's Strategic Plan also compiled a menu of potential activities prioritized according to efficiency in reducing pollutant loading. In general, activities that targeted sources and prevented pollutant generation (labeled as "Tier I") were considered more efficient than those that involved reduction of runoff flow and pollutants ("Tier II") and treatment of urban runoff ("Tier III"). Source control and pollution prevention activities tended to be non-structural in nature and easier to implement relative to runoff reduction and treatment activities that tended to be structural in nature and, therefore, more challenging to implement. The prioritized menu of potential activities can be found in Appendix A. Note that this menu is not exhaustive, and modifications are anticipated as more information is gathered and activity efficiency rates are confirmed through implementation pilots.

The activity prioritization process also simultaneously resulted in presenting a prioritized scheme for implementing the activities. In general, due to the efficiency and implementation facility of source control and pollutant activities, the City's Strategic Plan recommended their implementation first, maximizing the amount of pollutant load reduction possible through them before moving more aggressively with runoff reduction and treatment activities. Treatment activities, due to their higher cost, more challenging implementation requirements, and unconfirmed efficiency, were considered last resort activities. This tiered approach to activity selection and implementation would help management maximize the efficiency of its efforts at given resource levels. The City anticipates refining its activity selection and implementation through this tiered approach as more information is gathered and efficiency rates are confirmed through evaluation of pilots before implementation on a broader scale.

2.3 Assessment

The City's Strategic Plan also presented a framework to assess the efficiency of activities. Assessment of efficiency would allow the City to make good management decisions on whether activities should be implemented at a broader scale, modified to improve their efficiency, or removed from the menu of potential watershed activities. Knowing the efficiency of activities

(both in terms of pollutant load reduction divided by cost and ability to address multiple pollutants simultaneously) also allows for the selection of the most efficient suite of activities for implementation to maximize pollutant load reduction at given resources. Section 5 of this WURMP describes the assessment framework more thoroughly.

DRAFT

Section 3 Water Quality Assessment

This section describes the approach to assess the conditions of the receiving waters of the Mission Bay & La Jolla WMA, identify the WMA's water quality problems, and identify the likely sources/causes of those water quality problems. The purpose of the water quality assessment is to make possible management decisions that focus resources on the highest water quality problem priorities in the most problematic areas using the best known approaches.

3.1 Water Quality Assessment Approach

3.1.1 Data

The monitoring programs that the Copermittees are engaged in can be divided into three major categories: Regional Monitoring, Core Monitoring, and Process Studies.

Regional Monitoring encompasses large spatial areas and looks at many elements potentially impacted by urban runoff. It takes a longer-term view of the ultimate receiving waters, coastal bays, lagoons, and the Pacific Ocean. Regional Monitoring is designed to answer questions concerning broad ecological health and encompasses numerous components, including water and sediment quality, fish, benthos, birds, etc. Examples of Regional Monitoring include:

- Southern California Bight
- Southern California Coastal Waters Research Project
- Regional Harbor Monitoring Program

Core Monitoring refers to several long-term monitoring activities conducted by the Copermittees on an annual (or more frequent) basis. These activities are more focused, concentrate on fewer parameters than Regional Monitoring efforts, and are better able to provide data to assess long-term trends within and across WMAs. The Copermittees have designed these monitoring programs under an adaptive strategy that is subject to review as warranted by new data or information. Examples of Core Monitoring include:

- Mass Loading Stations
- Dry Weather
- Coastal Storm Drain Outfalls
- MS4 Outfalls
- Ambient Bay, Lagoon, and Coastal Receiving Water
- Urban Stream Bioassessment

Process Studies supplement both Regional and Core monitoring activities. They are short-term evaluations designed to answer specific questions. Examples include:

- Pollutant source identification and characterization
- DNA ribotyping
- Storm water discharge and toxicity link

3.1.2 Water Quality Problems

To identify the priority water quality problems within each WMA for this cycle of the Municipal Permit, the Copermittees have used data from the above monitoring programs together with the process outlined in the Model Watershed Strategy for determining appropriate actions to take in each HA. Based on the Copermittees' best professional judgment on the adequacy of monitoring and pollutant source data and the relationship of those data with the alphabetic "water quality priority ratings" (as presented in the 2005–2006 *San Diego County Municipal Copermittees Urban Runoff Monitoring* [Annual Monitoring Report]) determined using the methodology in the BLTEA, the Model Watershed Strategy recommends one of the following actions: load reduction/source abatement activities; monitoring studies; or source characterization studies. An implementation priority (high, medium, low) is also assigned to each monitoring study or source characterization study recommendation.

In essence, water quality problems for which the Model Watershed Strategy recommends load reduction/source abatement activities are "high priority water quality problems" (at least for certain HAs within the WMA). Water quality problems for which the Model Watershed Strategy recommends high and medium priority monitoring studies or source characterization studies are simply "priority water quality problems" (at least for certain HAs within the WMA).

However, note that, for the Mission Bay & La Jolla WMA, instead of using monitoring data in conjunction with the process outlined in the Model Watershed Strategy, the City decided to use the results from the geographic prioritization process completed as part of the City's Strategic Plan (see Section 2 of this WURMP) as the basis for determining the WMA's list of water quality problems. The results are presented in Section 3.3 below.

Note that, once the priority and high priority water quality problems have been identified, they are set until the Municipal Permit is re-issued again by the Regional Board. Only major, unforeseen events that the Copermittees judge to be sufficiently significant would prompt a modification to the list of high priority water quality problems.

3.1.3 Annual Water Quality Assessment

To assess yearly the water quality of the WMAs, the Copermittees have been compiling the Annual Monitoring Report. The Annual Monitoring Report presents data and findings from the various Regional Monitoring, Core Monitoring, and Process Studies programs implemented throughout the region by the Copermittees. In particular, it follows a methodology to determine which constituents during the reporting period have a high, medium, or low frequency of occurrence or exceedances. Diamonds are used (◆◆◆ for high, ◆◆ for medium, and ◆ for low) to graphically represent the ratings. The Copermittees are able to use the diamond rating to monitor trends in exceedances and take action accordingly. The diamond ratings will continue to be used by the Copermittees to assess the water quality of each WMA annually.

3.2 Receiving Waters Condition

This section summarizes the results of the 2006-2007 municipal urban runoff monitoring of the Mission Bay Watershed Management Area (WMA) conducted by Weston Solutions, Inc. on behalf of the San Diego County Municipal Copermittees.

3.2.1 Watershed Monitoring

Monitoring sites within the Mission Bay WMA are depicted in Figure III-1. Activities included:

- Chemical and toxicity testing of storm water runoff.
- Dry weather data analysis.
- Rapid stream bioassessment.

3.2.1.1 Storm Water Runoff

The Tecolote Creek (TC) mass loading station (MLS) is located along a trapezoidal, concrete-lined open channel on the east side of Morena Boulevard in San Diego (Figure III-2). The contributing runoff area covers over 5,992 acres, which is approximately 14% of the Mission Bay WMA. The primary land uses within the contributing runoff area are residential (44%), parks (19%) and transportation (18%) (Figure III-3).

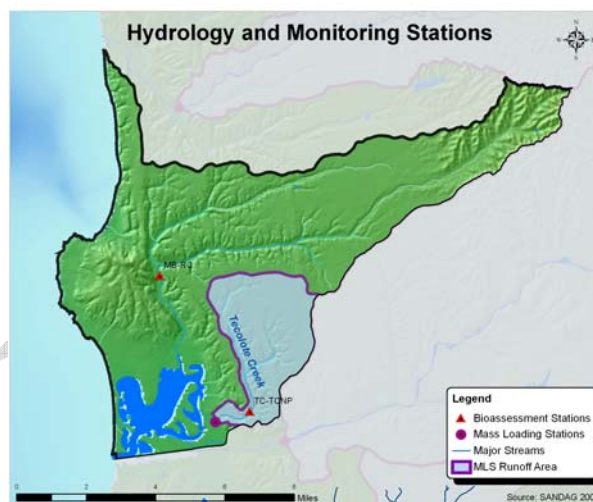


Figure III-1. Mission Bay WMA Monitoring Locations.



Figure III-2. Tecolote Creek MLS Site.

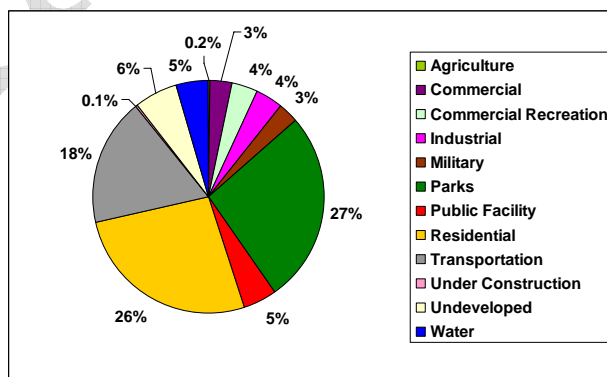


Figure III-3. Mission Bay Land Use Statistics

Three storm events were monitored during the 2006/2007 wet-weather season (Figure III-4).

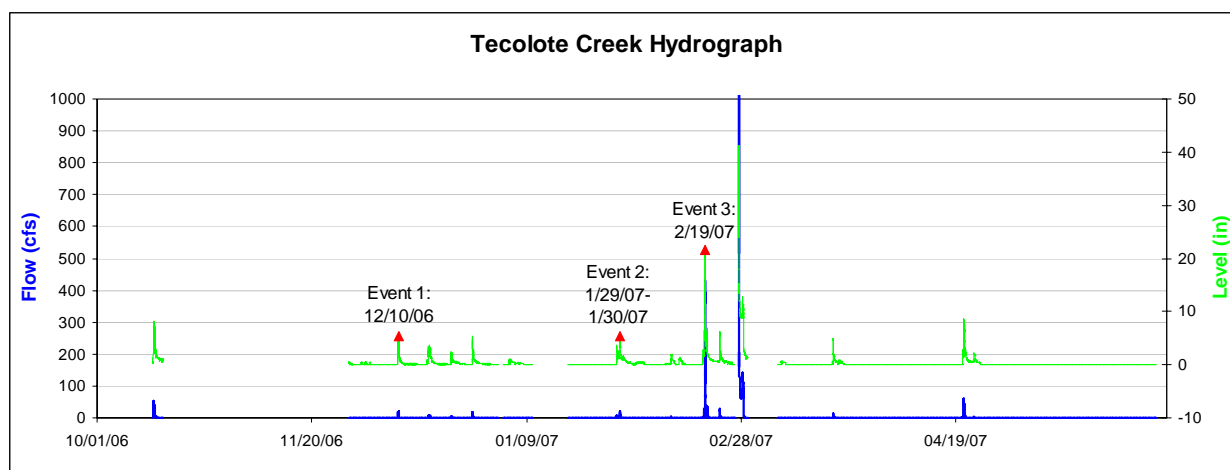


Figure III-4. Tecolote Creek 2006-2007 Wet Weather Monitoring Period Flow Record and Monitored Storm Events.

Table III-5 summarizes constituents with concentrations detected at levels above the benchmark water quality objectives (WQO) which are shown in bold. Pesticides, hardness, dissolved metals, and toxicity were not detected at levels above WQO.

Table III-5. Constituents With Results Above the Benchmark WQO During the 2006-2007 Monitoring Season at the Tecolote Creek MLS.

Analyte	Units	WQO	Source	2006-2007 Storms		
				12/10/06	1/30/07	2/19/07
Fecal Coliform	MPN/100mL	4,000	Basin Plan	5,000	5,000	3,000
BOD	mg/L	30	USEPA Multi-Sector Permit	9.2	39.7	10.0
Un-ionized ammonia	µg/L	25	Basin Plan	34.9	2.8	2.0
COD	mg/L	120	USEPA Multi-Sector General Permit	89	83	151
TDS	mg/L	1000	Basin Plan by watershed	1,680	2,310	308
TSS	mg/L	100	USEPA Multi-Sector General Permit	166	65	442
Turbidity	NTU	20	Basin Plan	84	12.4	282
Total Cadmium	mg/L	*	40 CFR 131	0.004	<0.001	0.012
Total Copper	mg/L	*	40 CFR 131	0.025	0.014	0.061
Total Lead	mg/L	*	40 CFR 131	0.014	0.005	0.056
Total Zinc	mg/L	*	40 CFR 131	0.109	0.057	0.391

* WQO based on water hardness

The recent monitoring year and the mean historical ratios of the benchmark water quality objective (WQO) from all storm events between October 2001 and April 2007 were plotted and compared to the WQO (Figure III-6). The highest ratios of water quality constituents above their respective WQO for the Mission Bay WMA were for turbidity, fecal coliform, total lead, total copper, TDS, and TSS. Total zinc, ammonia as N, BOD, and COD also had results that were above WQOs, but were not greater than three times the WQO.

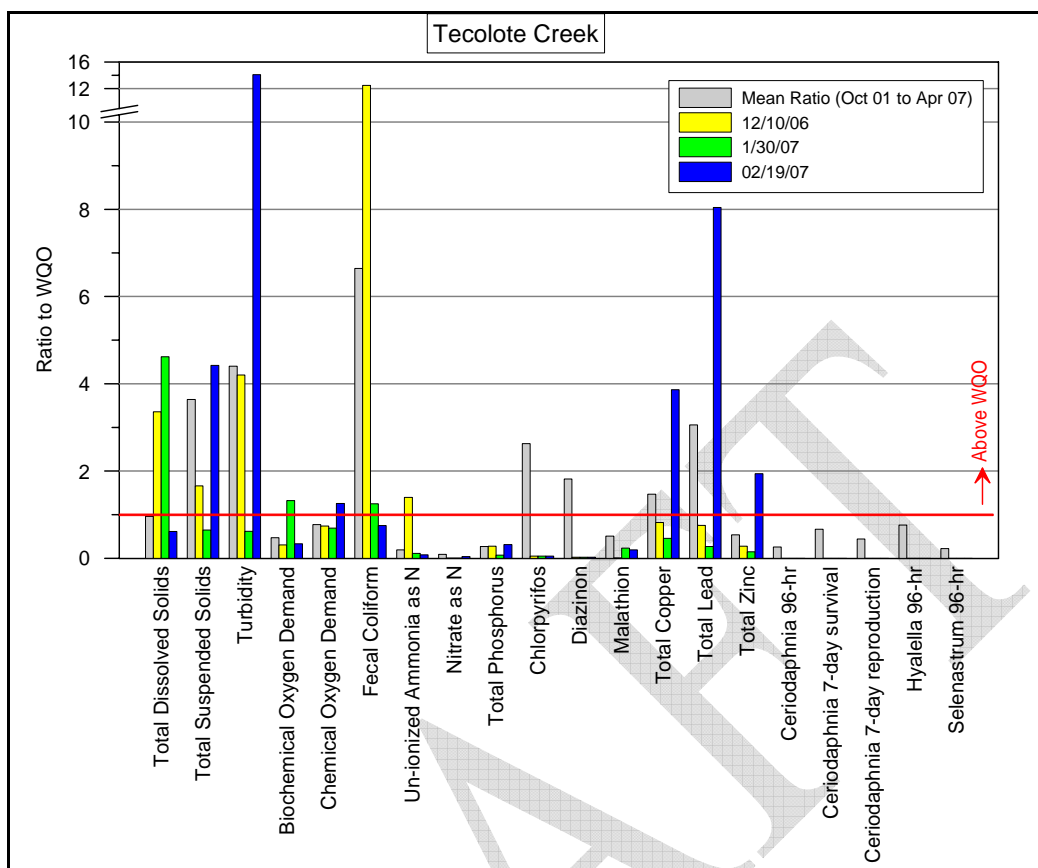


Figure III-6. Ratio of Results to WQO for the Mission Bay Watershed Management Area.

Mann-Kendall trend analyses were performed to identify any long-term trends observed in the data. Figure III-7 shows a statistically significant increasing trend for enterococci. Statistically significant decreasing trends exist for oil and grease, BOD, Diazinon, and nitrate.

3.2.1.2 Constituent Loads

Measured loads for total dissolved solids and bacterial indicators were greater than expected for a majority of the storm events sampled. Most of the constituents measured were within the expected range or lower than expected. In particular, metals consistently showed lower than expected loads for all the storm events sampled.

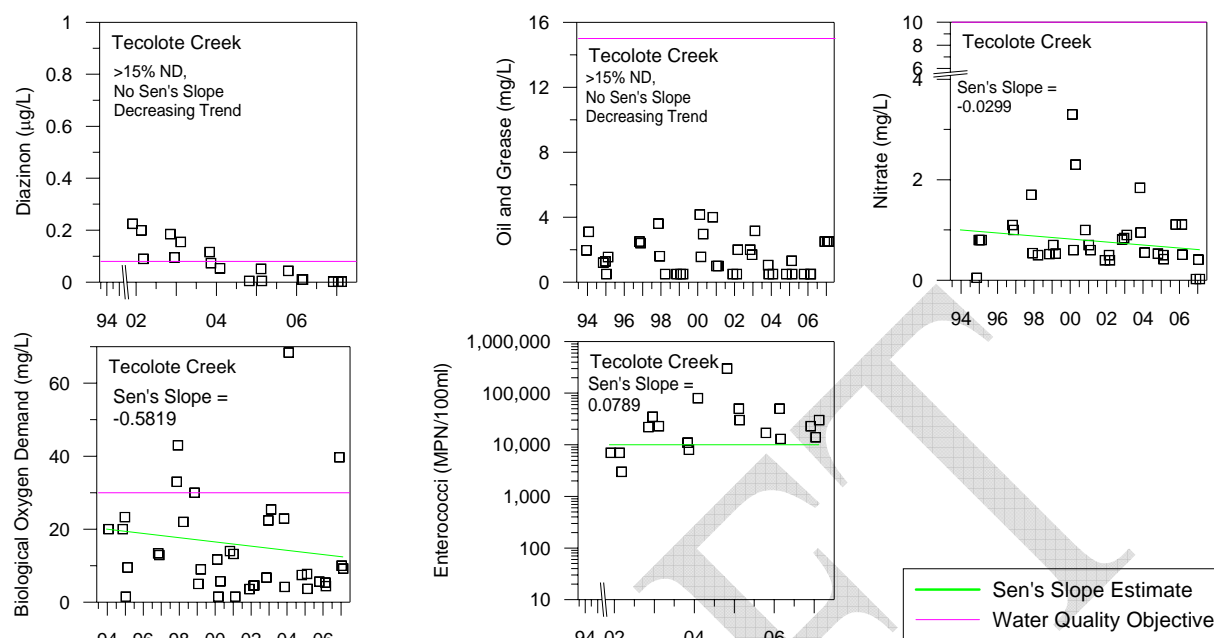


Figure III-7. Scatterplots of Constituents With Significant Mann-Kendall Trends and Sen's Estimate of Slope.

3.2.1.3 Dry Weather Data

A separate dry weather monitoring program is carried out by each jurisdiction. Dry weather monitoring investigations were performed at 54 sites in the Mission Bay WMA during the summer of 2006. Fourteen of these sites are located upstream of the MLS on Tecolote Creek. Constituents found to exceed dry weather action levels are depicted in Table III-8.

Table III-8. Mission Bay WMA 2006 Dry Weather Exceedances.

Analyte	Number of Action Level Exceedances	Total Samples
Conductivity	14	52
pH	3	53
Enterococcus	7	11
Fecal Coliform	2	13
Total Coliform	6	11
Ammonia (NH ₃ -N)	4	47
Orthophosphate (PO ₄ -P)	1	48
Turbidity	31	48

3.2.1.4 Stream Bioassessment

Stream bioassessment monitoring was conducted at two urban affected monitoring sites representing two different watersheds. One site was located in Rose Creek, downstream of the confluence with San Clemente Canyon Creek near Highway 52 (MB-RC) (Figure III-9). The other site was in Tecolote Creek in Tecolote Canyon Natural Park, near the downstream border of the Park (TC-TCNP) (Figure III-10).



Figure III-9. Rose Creek Monitoring Site



Figure III-10. Tecolote Creek in Tecolote Canyon Natural Park Monitoring Site

The Mission Bay WMA stream bioassessment sites had Index of Biotic Integrity (IBI) Ratings of Very Poor for both sites and both surveys (Table III-11). The observed species to expected species (O/E) ratios were in general agreement with the IBI scores, indicating degraded biotic conditions at the sites. It should be noted that these two sites had some of the highest specific conductance readings of all of the county monitoring sites.

Since the 2001, the Rose Creek site has had a mean IBI score of 12.5 and a mean O/E ratio of 0.58 while Tecolote Creek has had a mean IBI score of 16.2 and a mean O/E ratio of 0.52. Both indices rate the sites below the impairment threshold for all surveys.

Table III-11. Selected Biological Integrity Ratings and O/E Ratios for the Mission Bay WMA.

Mission Bay Watershed Management Area	Rose Creek near Highway 52 (MB-RC)		Tecolote Creek in Tecolote Canyon Natural Park (TC-TCNP)	
Survey	Oct-06	May-07	Oct-06	May-07
Index of Biotic Integrity/ Qualitative Rating*	8 Very Poor	9 Very Poor	12 Very Poor	1 Very Poor
O/E Ratio**	0.50	0.41	0.59	0.32

*IBI Score 0-13=Very Poor, 14-26=Poor, 27-40=Fair, 41-55=Good, 56-70=Very Good, **O/E ratio of >0.8 represents unimpacted conditions

3.2.1.5 Ambient Bay and Lagoon Monitoring

The Ambient Bay and Lagoon Monitoring Program was not conducted during the 2006-2007 monitoring period.

3.2.2 Watershed Management Area Assessment

The Mission Bay WMA was assessed using the interim guidance document “Watershed Data Assessment Framework” (June 2004) to comply with NPDES Order 2001-01. The following assessment results for the WMA are presented:

- Evidence of persistent water quality objective exceedances (turbidity); (fecal coliform and total coliform are not considered likely to induce toxic responses),
- No evidence of persistent toxicity, and
- Indications of benthic alteration.

Statistically significant long-term trends were observed for the following constituents:

- Enterococci (increasing)
- Oil and grease (decreasing)
- Diazinon (decreasing)
- BOD (decreasing)
- Nitrate (increasing)

Constituents of concern identified for the Mission Bay WMA are summarized in Table III-12.

Table III-12. Constituent of Concern Rating Table Summary for the Mission Bay WMA.

Constituents With Any Wet Weather (MLS) WQO or Dry Weather Action Level Exceedance	Frequency of Occurrence Rating	Criterion Basis
Fecal Coliform	High	Mass loading station tests results exceed WQO in greater than or equal to 80% of samples.
Total Coliform	High	Six of the last consecutive storm samples at the MLS exceed WQO.
Turbidity	High	Less than 80% and greater than or equal to 50% of the MLS samples exceed WQO <u>and</u> at least one dry weather site exceedance in the past year.
TSS	Medium	Less than 80% and greater than or equal to 50% of the MLS samples exceed WQO <u>and</u> one or more exceedances found in last 2 years of monitoring at the MLS.
Enterococcus	Medium	
Lead	Medium	
pH	Low	Dry weather sample exceedances in 10 to 50% of the samples in the past year.
Ammonia	Low	
COD	Low	MLS exceedances found in 25% to less than or equal to 50% of the samples <u>and</u> at least one exceedance found in last 2 years at the MLS (with or without dry weather sample exceedances in the past year).

3.2.3 Recommendations

Several considerations should be made with respect to the findings provided in this watershed management area assessment. The recommendations for this watershed are to continue monitoring to gather long-term trend information, identify where data gaps exist and do not allow for informed decision making, and consider where watershed resources may be more effectively targeted to reduce heavy metals, dissolved minerals, nutrients, bacterial indicators, toxicity, and impacts to the physical stream habitats. The new permit monitoring order (R9-2007-0001) calls for two temporary watershed assessment stations (TWAS) for this watershed. The additional upstream stations will provide the ability to evaluate the distribution of heavy metals, dissolved minerals, nutrients, bacteria, and toxicity.

3.3 Water Quality Problems

This section outlines the water quality problems identified by the City to be targeted in the Mission Bay & La Jolla WMA.

3.3.1 Priority Water Quality Problems

The City's Strategic Plan lists the following as "constituents of concern" in the Mission Bay & La Jolla WMA. The City has decided to refer to these constituents of concern as "priority water quality problems."

- Bacteria/Pathogens
- Heavy Metals
- Nutrients
- Pesticides
- Sediment

3.3.2 High Priority Water Quality Problems

Of the list above, the City has determined the following water quality problems as "high priority water quality problems" because they each have received a water quality priority rating of A (determined using the methodology in the BLTEA) as indicated by Table 9-16 of the 2005–2006 Annual Monitoring Report.

- Bacteria/Pathogens
- Heavy Metals
- Nutrients

3.4 Likely Pollutant Sources

Table III-13 below lists the likely pollutant sources per the BLTEA for each of the high priority water quality problems identified in Section 3.3.2 above.

Table III-13. Likely Sources of High Priority Water Quality Problems in Mission Bay WMA.

High Priority Water Quality Problem	Likely Sources per BLTEA
Bacteria/Pathogens	Eating/drinking establishments; animal facilities; landscaping (e.g., parks, golf courses, cemeteries, etc.); publicly owned treatment works (water and wastewater); home automobile–associated activities, home and garden care activities, waste disposal
Heavy Metals	Auto mechanical repair, maintenance, fueling, or cleaning; automobile and other vehicle body repair and painting; botanical or zoological gardens and nurseries/greenhouses; fabricated metal; motor freight; boat mechanical repair, maintenance, fueling, or cleaning

Nutrients	Animal facilities; botanical or zoological gardens and nurseries/greenhouses; landscaping (e.g., parks, golf courses, cemeteries, etc.); pest control services; home automobile-associated activities, home and garden care activities, waste disposal; roads, streets, highways, and parking facilities; parks and recreation facilities
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DRAFT

Section 4 Plan of Action

This section presents the City's five-year plan of action to address the High Priority Water Quality Problems identified in Section 3.3.2. Activities included in the five year plan have been selected based on their ability to effectively address high priority water quality problems within the WMA as detailed in the City's *Strategic Plan for Watershed Activity Implementation* (November 2007). Table IV-1 below summarizes the activities included the plan of action. A more complete table with additional information can be found in Appendix B.

Table IV-1. Summary of Five-Year Plan of Action.

Activity Type / ID Number / Name			Anticipated Implementation Year	Water Quality Problem(s) Addressed	Status (FY 08)
Water Quality	MB-1001	Alpha Project Trash Cleanups	2008	Bacteria	Implementation
	MB-1002	ILACSD Trash Cleanup Sponsorship	Annual	Bacteria	Implementation
	MB-1003	SDCK Trash Cleanup Sponsorship	Annual	Bacteria	Implementation
	MB-1004	Targeted Animal-Related Facility Inspections	2011	Bacteria; Nutrients	Planning
	MB-1005	Targeted Auto-Related Facility Inspections	2008	Metals	Planning
	MB-1006	Targeted Landscaping-Related Facility Inspections	2012	Bacteria; Nutrients	Planning
	MB-1007	Targeted Municipal Facility Inspections	2012	Bacteria; Nutrients; Metals	Planning
	MB-1008	Targeted Residential Activity Inspections	2009	Bacteria; Nutrients; Metals	Planning
	MB-1009	Targeted Restaurant Facility Inspections	2008	Bacteria	Planning
	MB-1010	Targeted Street Sweeping	2008	Metals	Planning
	MB-1011	Municipal Rain Barrel Installation	2008	Bacteria; Nutrients; Metals	Planning
	MB-1012	Hydrodynamic Separator Installation	2010	Bacteria; Nutrients	Planning
	MB-1013	LJ Dry Weather Flow Diversions	2011	Bacteria; Nutrients; Metals	Planning
	MB-1014	LJ-MB Dry Weather Flow Diversions & Flap Gates	2011	Bacteria; Nutrients; Metals	Planning
	MB-1015	Kellogg Park Green Lot BMP Retrofit	2011	Bacteria; Nutrients; Metals	Design
	MB-1016	Mt. Abernathy Green Street BMP Retrofit	2010	Bacteria; Nutrients; Metals	Design
Education	MB-1017	Infiltration LID BMP #1	2010	Bacteria; Nutrients; Metals	Planning
	MB-1018	Infiltration LID BMP #2	2011	Bacteria; Nutrients; Metals	Planning
Education	MB-2001	Karma/Karma Rewind PSAs	Annual	Bacteria; Gross Pollutants	Implementation
	MB-2002	AdMobile Mobile Advertising	Annual	General; Bacteria	Implementation
	MB-2003	Business & Residential CBSM Pilots (La Jolla)	2008-2009	Bacteria; Gross Pollutants	Planning & Implementation
	MB-2004	Business CBSM Pilot (Genessee)	2010	Bacteria; Gross Pollutants	Planning
Special Studies					
	MB-3001	Tecolote Creek Bacterial Source ID Study	N/A	Bacteria	Ongoing
Public Participation	MB-4001	Non-Governmental Organization Engagement	Annual	All	Ongoing
	MB-4002	Outreach	Annual	All	Ongoing
	MB-4003	Independent Rate Oversight Committee	Annual	All	Ongoing
	MB-4004	Mission Bay Park Committee	Annual	All	Ongoing
	MB-4005	Project Clean Water	Annual	All	Ongoing
	MB-4006	Think Blue Website	Annual	All	Ongoing
Land Use					

4.1 Proposed Water Quality Activities

Refer to Appendix C for the Activity Summary Sheets describing the City's proposed watershed water quality activities and details regarding their anticipated implementation schedule. Note that the list of activities and the accompanying descriptions are subject to change.

4.2 Proposed Education Activities

Refer to Appendix C for the Activity Summary Sheets describing the City's proposed watershed education activities and details regarding their anticipated implementation schedule. Note that the list of activities and the accompanying descriptions are subject to change.

4.3 Proposed Special Studies

Refer to Appendix C for the Activity Summary Sheets describing the City's proposed special studies. Note that the list of activities and accompanying descriptions are subject to change.

4.4 Proposed Public Participation Activities

The City will continue to actively encourage the participation and input of diverse stakeholders in the development, implementation, and assessment of the Mission Bay WURMP. Historically, stakeholders have participated regularly in activity planning and implementation efforts via formal and informal discussions and meetings at the City or stakeholder locales. Because the City is the only Copermittee within the WMA, internal and stakeholder meetings are held at an ad hoc basis. The City values its strong relationships with stakeholders and will continue to use this informal participation as the foundation of its participation and implementation efforts in conjunction with the more formal participation mechanisms outlined below.

The paragraphs below broadly outline the public participation strategy that the City will be pursuing to encourage stakeholder engagement in the WURMP. Specific public participation activities as conducted will be reported in the annual reports to be appended to this WURMP.

4.4.1 Non-Governmental Organization Engagement

The City will continue to engage non-governmental organizations (NGOs) active in the WMA in the development, implementation, and assessment of the Mission Bay WURMP through a variety of means, including, but not limited to:

- Entering into agreements with NGOs to implement activities, such as trash/debris sponsorships, creation and distribution of education materials, workshop facilitation, research, community events, and presentations
- Inviting NGO representatives to the City and sending City representatives to NGO meetings to discuss urban runoff pollution prevention efforts, share input, and identify opportunities for coordination
- Partnering with NGOs as appropriate in advocating legislation protective of water quality

4.4.2 Outreach

The City will continue to conduct outreach to the public on its own and in coordination with NGOs as described above. Outreach efforts may involve, but not be limited to, the following:

- Presence and distribution of materials at community events, e.g., booths, trash/debris, cleanup teams, delegates
- Presentations and talks at stakeholder events/meetings
- Workshops targeting specific audiences/pollutant sources
- Participation in ad hoc committees

4.4.3 Independent Rate Oversight Commission

The Independent Rate Oversight Commission (IROC) will assume and expand upon the role formerly played by the City's Public Utilities Advisory Commission (PUAC). The IROC will replace the PUAC as the venue used to review changes in budgets and the scope of projects being proposed for the water and wastewater systems, including storm water. The IROC, composed of various members of the community, will provide the City not only with rate oversight, but also policy recommendations on storm water and urban runoff issues. Meetings will be open to the public, and resulting policy/action recommendations will be forwarded to the Mayor's Office and City Council. The IROC will provide stakeholders a venue for influencing the development of the City's urban runoff management programs, including the Mission Bay WURMP.

4.4.4 Mission Bay Park Committee

The Mission Bay Park Committee advises the Park and Recreation Board of the Park and Recreation Department on the development, utilization, and policies regarding Mission Bay Park. The Committee meets once a month and provides a venue for the public and the Storm Water Division to discuss issues related to urban runoff management pertaining to the park. In the past, for example, the Storm Water Division made a presentation to the committee on the findings of a bacterial source identification study on Mission Bay, which led to the construction of the Mission Bay Computerized Irrigation System Project, designed to reduce over-irrigation in the park conveying bacteria-laden bird wastes into the bay. The City will continue to use this venue to engage stakeholders in the WURMP, especially with regards to project implementation.

4.4.5 Project Clean Water

Project Clean Water, which was initiated in July 2000 by the Regional Copermittees, established a framework for the broad-based and collaborative development of solutions to local water quality problems. The relationship of Project Clean Water policies to Municipal Permit compliance is important. An underlying tenet of this effort is that Municipal Storm Water Permit compliance alone cannot achieve clean water. As such, Project Clean Water seeks to actively involve a multitude of stakeholders in exploring water quality problems, their causes, and their solutions. This significantly broadens the base of stakeholder input available to consider issues directly related to Municipal Permit compliance. As with Copermittee meetings, all Project Clean Water meetings are open to the public and participation is encouraged through a variety of avenues including a website, electronic notifications, and personal phone calls.

To provide information on meetings, work products, and other valuable links to the public and interested parties, a Project Clean Water website¹ is maintained. Interested parties have extensively utilized the site to post various work products for review and comment. It is the goal of Project Clean Water to establish this site as a centralized source of water quality information for the San Diego region.

The Mission Bay WURMP and annual reports are placed on the website to allow stakeholders to view the documents and submit comments. The City will continue to use Project Clean Water as a vehicle to update stakeholders and encourage feedback as it continues to develop and implement the WURMP.

4.4.6 Think Blue Website

The City's Storm Water Division maintains the Think Blue website². It is available to the public and professional organizations as a resource to help them be compliant with urban runoff regulations and to educate themselves on urban runoff issues and solutions. BMP fact sheets and other education materials in both English and Spanish as well as bacterial source identification studies are available online. The Storm Water Division has also posted the Mission Bay WURMP on the website, as well as the annual reports to provide stakeholders the opportunity to review and comment on the documents. In addition, solicitations for public participation in meetings and outreach events are posted on the website. The City will continue to use this venue to encourage stakeholder participation in the development and implementation of the Mission Bay WURMP.

4.5 Proposed Land Use Planning Activities

The City is divided into various politically recognized communities, each with its own community plan prepared by the City Planning & Community Investment Department that implement the planning policies in the City's General Plan. The Mission Bay & La Jolla WMA encompasses nine communities: Linda Vista, Clairemont Mesa, Kearny Mesa, Mission Beach, Pacific Beach, La Jolla, University City, Mission Bay Park, and MCAS Miramar. Of these, seven have community plans (Mission Bay Park and MCAS Miramar are covered under other planning documents). Each community plan is updated periodically to reflect changes in the community, as well as provide fresh direction regarding growth and development. For example, the California Coastal Commission approved the La Jolla Community Plan update in FY 2004, and City staff began its implementation in FY 2005. The La Jolla Community Plan includes extensive storm water policies pertaining to coastal bluffs and steep hills.

The City will use the community plan update process, as needed, to incorporate general urban runoff management and watershed principles, such as consideration of downstream impacts of land use decisions and promotion of site design features protective of water quality, into the plans to address special concerns identified for the Mission Bay & La Jolla WMA. Updates to the community plans will be primarily reported in the City's JURMP due to their general nature and close relationship with the General Plan. However, highlights will be provided in the WURMP annual report as deemed appropriate.

¹ <http://www.projectcleanwater.org>

² <http://www.thinkbluesd.org>

Section 5 Effectiveness Assessment

This section outlines the framework that the City will use to assess the effectiveness of its efforts at improving surface water quality within the Mission Bay & La Jolla WMA.

5.1 Introduction

According to the California Stormwater Quality Association (CASQA) document, *An Introduction to Storm Water Program Effectiveness Assessment*, effectiveness assessment is “necessary and fundamental” to the development and implementation of a successful urban runoff pollution prevention program. Effectiveness assessment assists managers in (1) determining whether activities and programs are resulting in a reduction of pollutants in urban runoff and (2) planning future efforts to maximize resources.

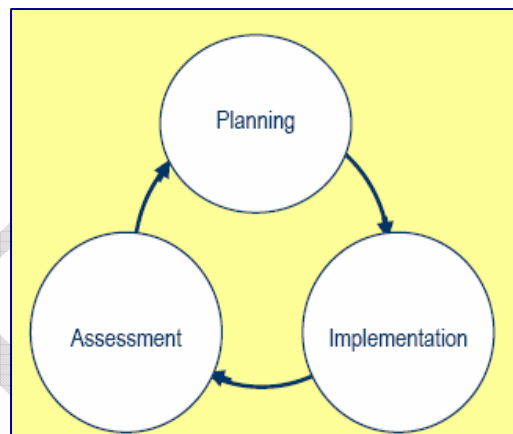


Figure V-1. CASQA Iterative Program Management Process.

Like most management programs, the City uses assessment as part of an iterative feedback loop (Figure V-1) involving (1) Planning, (2) Implementation, and (3) Assessment. Because assessment is not independent of planning and implementation, these two aspects of program management are also discussed in this section. The City incorporates planning on an annual and long-term cycle. Annual planning incorporates the lessons learned from implementation and assessment of the current year’s activities, and the cycle begins again with implementation of the next year’s activities. At the end of each Permit cycle, information gained during implementation and assessment over the Permit cycle is used for program planning over the next Permit cycle (i.e., long-term planning). Management questions are used during annual and long-term planning to ensure that the City selects activities that supply information needed to manage its program most effectively and efficiently.

The City views the Watershed Urban Runoff Management Program (WURMP) and Jurisdictional Urban Runoff Management Program (JURMP) as integrated components to its overall municipal Storm Water Program. The City’s overall Storm Water Program incorporates the JURMP, WURMP, and other programs as needed to implement and comply with the Permit. The City first complies with all aspects of the Permit, implementing activities as required. In addition, the City identifies certain projects in both its WURMP and JURMP programs for special efficiency assessment. Projects identified as such in the WURMP are referred to as “pilot” activities, while those identified as such in the JURMP are called “significant” activities. In general, most activities identified for special efficiency assessment will be WURMP activities. This allows the City to perform the “pilot” activities to determine their effectiveness at reducing pollutant loads on a small scale, before implementing wide-scale. This, however, will not preclude the identification of JURMP activities for special efficiency assessment, if feasible. Where feasible, the City will also integrate into its program those effectiveness assessment approaches that are developed collaboratively by the Copermittees. When efficiency is assessed,

the unit of measurement for efficiency will be a pollutant load reduction to cost ratio. Data will be collected in units using the regional standards developed collectively by the Copermitees (e.g., tons and not cubic yards for street sweeping debris). If a pilot activity proves effective and efficient, it may be transferred to the JURMP program for City-wide large scale implementation, or implemented on a watershed-level. If a significant activity proves effective and efficient, it will be recommended for continued implementation into the next Permit cycle; those that do not prove effective and efficient may be recommended for discontinuance or modification in the next Permit cycle.

5.2 Effectiveness Assessment Approach

Assessment is not possible without program planning and implementation, and, therefore, a summary of program planning and implementation is presented below. The cycle of planning, implementation, and assessment, which is presented in Figure V-2 below, is explained and referenced in the text.

5.2.1 Program Planning

Management questions serve as the framework to help focus future activities and assess the program as a whole. The process of annual assessment is presented in Figure V-2 on page 5-4, Steps 1-3.

Step 1: All Permit-required activities are implemented according to the Permit. The City selects pilot and/or significant activities for special efficiency assessment based on data gaps in the Activity Efficiency Ratings Table from the previous years (discussed in Step 8) or based on management questions and other strategic plans. Pilot activities are selected for the WURMP to gather information on a small scale to determine if an activity is effective and efficient before implementing on a larger scale. Significant activities are selected for the JURMP to undergo additional study to gather further effectiveness and efficiency information.

Step 2: The City develops activity-specific management questions. An example of management questions for an inspection activity could include:

- Do inspections increase rate of BMP implementation?
- Does increased rate of BMP implementation affect load reduction?
- What is the optimal frequency of inspection (point of diminishing returns)?
- Are spot inspections more effective than scheduled inspections?
- Does enforcement alter future behavior (implementing BMPs)?
- Does education increase rate of BMP implementation?
- How can an estimate of load reduction be made from inspection data?

Step 3: The City defines targeted outcomes, assessment methods, and assessment measures for each activity. Continuing the example from Step 2, these would include:

Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate • Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction)
Assessment Method(s)	<ul style="list-style-type: none"> • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data) • Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3)
Assessment Measures, Assessment Outcome Levels & Data:	<ul style="list-style-type: none"> • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

5.2.2 Implementation

Implementation is shown as part of the iterative program management loop in Figure V-2, below.

Step 4: Permit-required activities will be implemented as required. Pilot and significant activities will be monitored to collect data and information needed to calculate or estimate activity efficiencies. Both pilot and significant activities may be implemented through the WURMP, although it is possible to implement significant activities through the JURMP.

Data will be collected during implementation. Some data may be used to show compliance with the Permit, while other data may be used to assess effectiveness and efficiency. Outcome Levels 1-5 refer to the Targeted Outcome Levels presented in the CASQA document. Outcome Levels 4-5 data can be used to estimate load reduction to cost ratios, while Outcome Levels 1-3 data are reported in annual reports and may be used to help estimate load reduction to cost ratios.

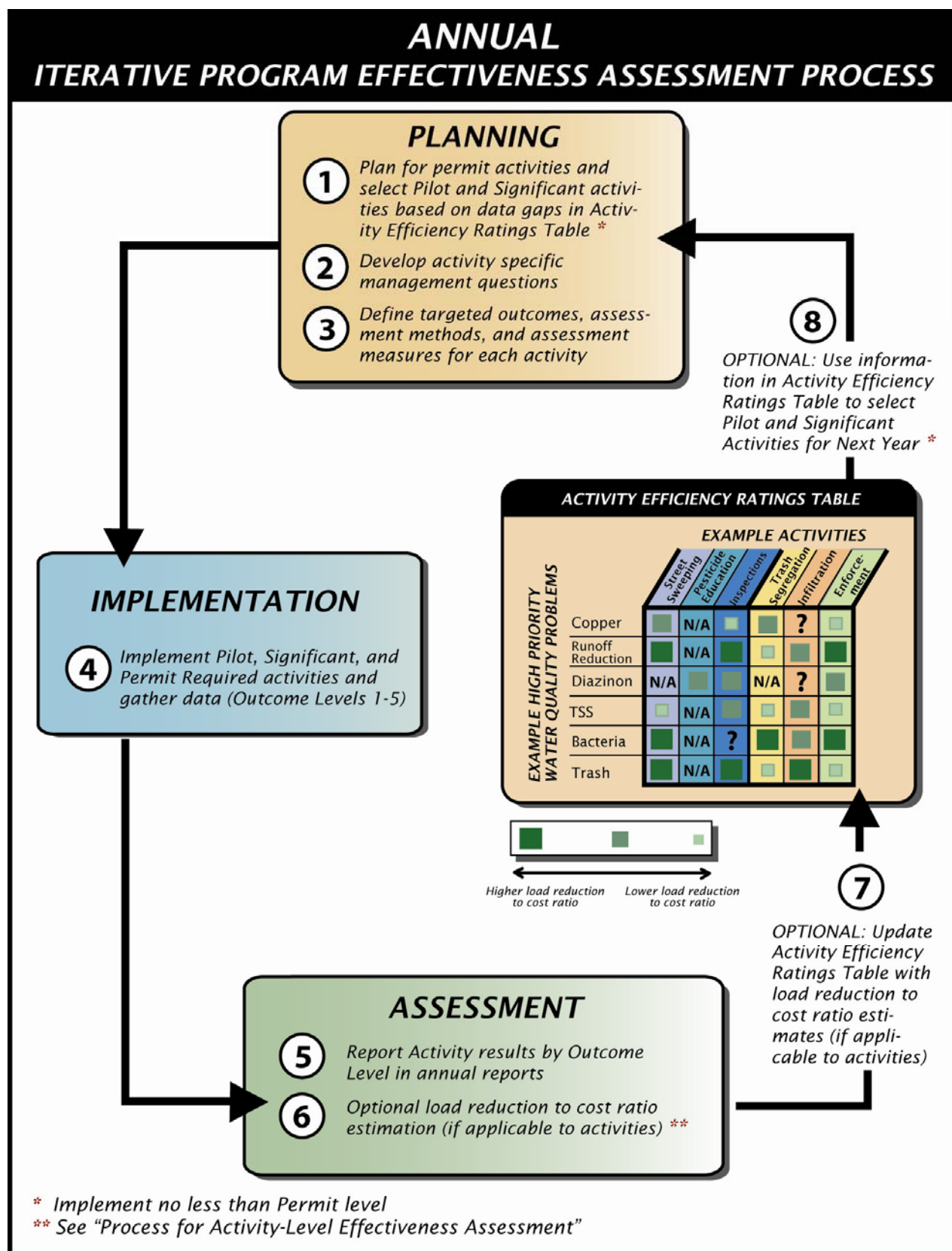


Figure V-2: Annual Planning, Implementation, and Assessment Process for Urban Runoff Management.

5.2.3 Assessment

Like Program Planning, there are two basic types of assessment: 1) long-term assessments of the overall Storm Water Program (which include the JURMP, WURMPs, and other programs); and 2) annual assessments (short term) of the overall urban runoff management program and of the individual activities. Following the cycle shown in Figure V-2, steps 5-7 will be completed during annual assessment.

5.2.3.1 Annual Assessment

The City will annually assess the implementation of its Storm Water Program, WURMP components, and significant activities for compliance with the Permit through the annual reporting process (see Appendix XIII, “Annual Report Form Questions”).

Step 5: The City will report Targeted Outcome Level data 1-5 in its Annual Report, and will include the following Permit required information:

WURMP Implementation Level 1 Targeted Outcomes assessed on an annual basis include the following:

- Update any watershed maps.
- Update assessments and analyses of the WMAs current and past applicable water quality data, reports, analyses, and other information, including identification of the watershed’s water quality problems and high priority water quality problem(s) during the reporting period.
- Identify the likely sources, pollutant discharges, and/or other factors causing the high priority water quality problems within the watershed.
- Update list of potential Watershed Water Quality Activities.
- Identify and describe the Watershed Water Quality Activities implemented by each Copermittee during the reporting period.
- Update list of potential Watershed Education Activities.
- Identify and describe the Watershed Education Activities implemented by each Copermittee during the reporting period.
- Describe the public participation mechanisms used during the reporting period and the parties that were involved.
- A description of Copermittee collaboration efforts.
- Describe the efforts implemented to encourage collaborative, watershed-based, land-use planning.

Targeted Outcome Levels 2-4 will be summarized annually and reported in the WURMP Annual Reports. Targeted Outcome Levels 5 and 6 will be reported on an annual basis if possible.

Step 6: The optional load reduction to cost ratio will be completed by following the process shown in Figure V-3 on page 5-7. Management questions for each pilot or significant activity will be answered by assessing the targeted outcomes using the assessment methods and measures for each activity. For WURMPs the management questions, targeted outcomes, assessment methods, and assessment measures will be included in the activity summary sheets and the

Annual Reports. For JURMPs, the significant activity management questions, targeted outcomes, assessment measures, and assessment methods will be included in the Annual Reports' effectiveness assessment sections.

Data will be collected to answer the management questions and calculate or estimate load reduction to cost ratios for each water quality and education activity. It may not be possible to report load reduction to cost ratios for all activities, and therefore those data will be reported as Outcome Levels 1-3 data in the annual report. If Outcome Level 4 data are not available, Outcome Levels 1-3 data may be used to estimate load reductions.

If, after implementation, it is determined that an activity has led to a pollutant load reduction, then the efficiency of the activity will be assessed by calculating or estimating the load reduction to cost ratio. This information will be used to update the Activity Efficiency Ratings Table each year.

If the activity did not lead to a pollutant reduction but was required by the Permit, then implementation of the activity will continue, and improvements to future Permit requirements can be justified through data tracking.

If the non-load reducing activity was not required by the Permit, then it would be further assessed to determine if changes can be made that would potentially lead to a pollutant reduction, and the activity would be re-implemented and re-assessed. If no changes to the activity to improve its effectiveness are possible, then the activity would be terminated and not considered for future implementation.

Activities that reduce loads can be further refined and assessed to maximize their efficiency. The load reduction to cost ratio (e.g., tons reduced/dollar) is estimated for pilot and significant activities that were focused on collecting Outcome Levels 4-6 data. In some cases, it may be possible to infer or estimate load reductions from data collected by other Jurisdictions, agencies, or as part of the applicable scientific literature. The costs will include every aspect of the activity, for example, planning, implementation, and assessment costs. The Activity Efficiency Ratings Table is updated with the new data.

If an activity shows load reduction, but is costly, it will be assessed and refined to improve the load reduction to cost ratio. If no refinement can be made, equivalent load-reducing activities that are less costly may be piloted and phased in as substitutes for that inefficient activity if it was not required by the Permit. If the activity was required by the Permit, improvements to future Permit requirements can be justified through data tracking.

Once efficiency of all activities has been maximized, then the City will have been successful in identifying and implementing feasible activities that positively affect water quality, which is the building block of an effective program.

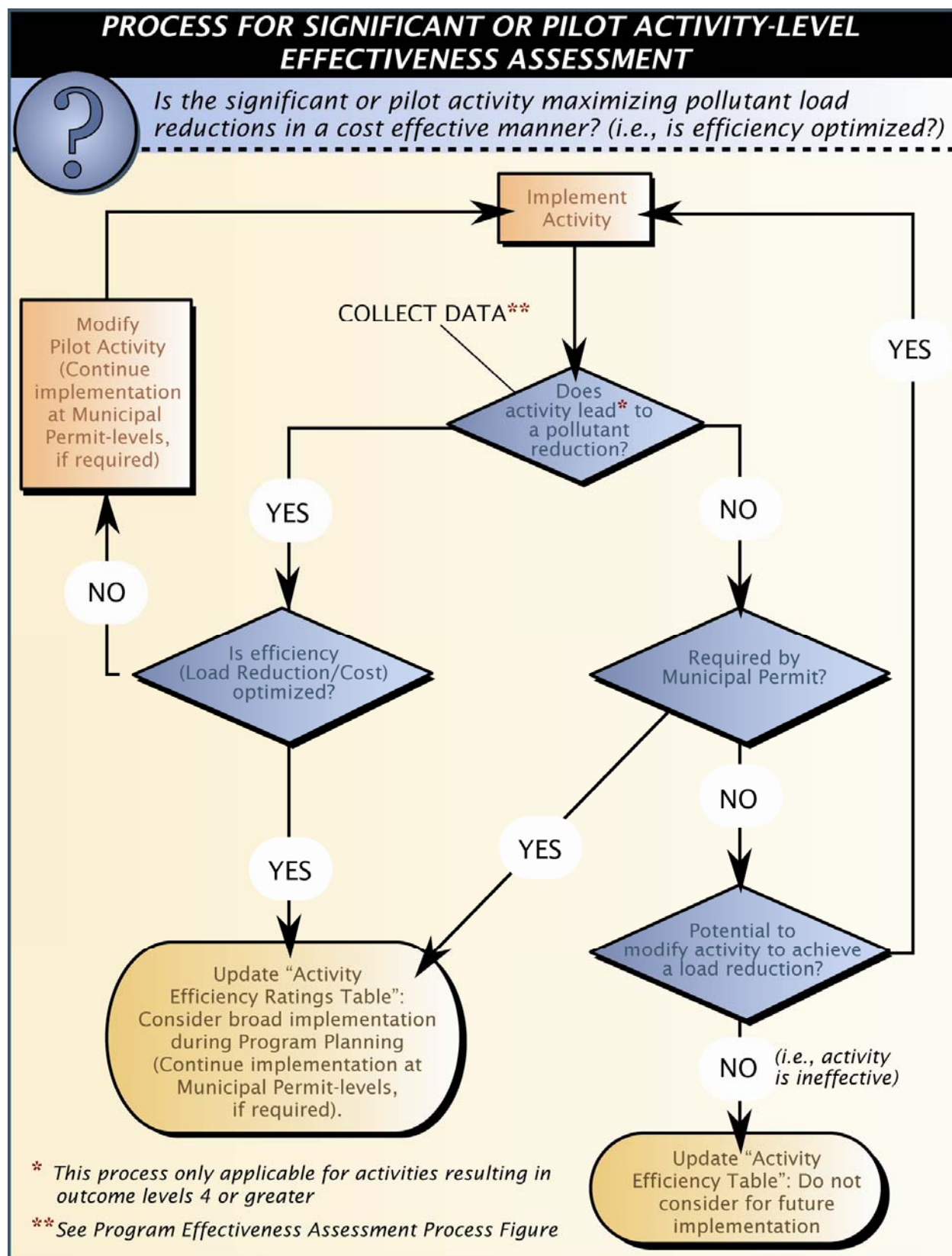


Figure V-3. Flow Diagram of Activity-Level Effectiveness Assessment.

Step 7: Each year, the City will update load reduction to cost ratios for pilot, significant, and applicable Permit-required activities completed during the prior year. The size of the square within each activity-pollutant combination is an indication of the load reduction to cost ratio of that activity for that water quality problem. Small squares indicate a small ratio (small reduction for the cost), while large squares indicate a large ratio (large reduction for the cost). Note that, during the first years of the Permit cycle, the efficiency within the Activity Efficiency Ratings Table may be only *estimated* load reduction to cost ratios. In the example given in Figure V-4 most of the boxes are filled with a question mark (?) during the first year of the Permit (Year 1). This is because at the beginning of the Permit cycle, ratios may be estimates based on best professional judgment. Because management decisions must be made, sometimes in the absence of information, the question marks serve as a reminder that more data are needed to provide a quantitative assessment. As activities are completed and assessed, estimates and calculations of load reduction to cost ratios will be updated in the table each year. If an activity is not applicable to a pollutant, it is marked not applicable (N/A) in the table.

The goal is to collect and store data within the Activity Efficiency Ratings Table over the Permit cycle (5 years) and use it as a planning tool for the next Permit cycle. It is not necessary to complete the table before the next Permit cycle.

Step 8: Use Information from Activity Efficiency Ratings Table for Activity Selection.

This step is the same as Step 1 in Section 5.2.1 above. It is repeated here to illustrate how the process begins during the first year of a Permit cycle (with activity selection), and how it is repeated each year to select activities for the next fiscal year.

5.2.3.2 Long-Term Assessment

Figure V-4 on page 5-10 illustrates the steps that will help the City assess the effectiveness of its URMP every Permit cycle (long-term). This figure is very similar to Figure 13-2, except that implementation and annual assessment are not shown in the figure. At the end of every Permit cycle, an attempt is made to optimize resources based on the load reduction to cost ratio information present in the Activity Ratings Efficiency Table. Note that the Activity Ratings Efficiency Table need not be complete to optimize. Additionally, Integrated and Water Quality assessments will be completed to answer the management questions as described in the examples below.

Step 1: Define Long-term Management Questions

The first step is to answer management questions developed during the inception of the Permit to determine if any progress toward improving water quality has been observed.

Examples of long term management questions and assessment:

- *Is the City observing an improvement in water quality (both of urban runoff/discharge and of receiving waters) as shown through long-term water quality assessments?*

An Integrated Assessment is used here. Qualitative analysis of various regional programs and activities implemented within the City during the Municipal Permit

cycle will be related to receiving water quality data collected within the City's jurisdiction (including upstream inputs). If successful, Outcome Levels 5 and 6 data may be reported in the Annual Reports. If unsuccessful, the data gathering or assessment methods may be modified to allow better comparison of activities to receiving water data.

- *Is the City making progress towards achieving its program goal of water quality improvement in a way that maximizes resources, is cost effective, and achieves the maximum water quality benefit possible?*

A Water Quality Assessment is used here. Information collected from regional, City, and Municipal Permit-required programs will be compiled and assessed for areas within the City's jurisdiction. These data will be assessed for trends or other applicable analyses. Qualitative assessments will also be completed from the Activity Efficiency Rating Table, and an integrated assessment of all aspects of the urban runoff management program. If the answer is yes, the City will continue to use the suite of activities at a broader scale in future years.

- *Is the City able to determine the efficiency of its activities?*

This question will be answered by examining the Activity Efficiency Ratings Table. Successful updates over the Permit cycle will mean that the City's assessment strategy, management questions, data needs assessment, and data gathering strategies are working. If it was not possible to update much information in the table that will mean that the City may need to modify its methodology to be able to better assess its activities and programs.

- *Is the City implementing the most efficient suite of activities to improve water quality?*

The answer to this question will be based on the optimization of the Activity Efficiency Ratings Table (Step 3 in Figure V-4). Overall high pollutant load to cost ratios will mean that the City is moving towards its goal of implementing the best suite of activities. If the City is consistently spending money with small or no observed load reductions, then changes to the program can be made to improve future water quality. The City will determine which pilot and/or significant activities to continue, expand, discontinue, or add.

- *How is the City doing in terms of identifying, characterizing, and targeting pollutant sources of the high priority water quality problems?*

The answer to this question will be based on activities such as source identification studies and inspections. If pollution sources are identified, the City can better target activities to maximize their effectiveness and efficiency.

Step 2: Compile Annual Activity Efficiency Ratings Table

Information gathered and stored in the Activity Efficiency Ratings Table over the Permit cycle will be summarized into one large database that can be used to assist in answering management questions, as well as for optimization of the Program.

Step 3: Optimize Activity Efficiency Ratings Table

Determine where money may be best spent to get the largest load reduction to cost ratio for each high priority water quality pollutant. This step will also help answer the management questions.

Step 4: Develop Management Goals and Questions

This is the same as Step 1, above, and uses results from Steps 2 and 3 to help develop new management goals and questions for the next Permit cycle.

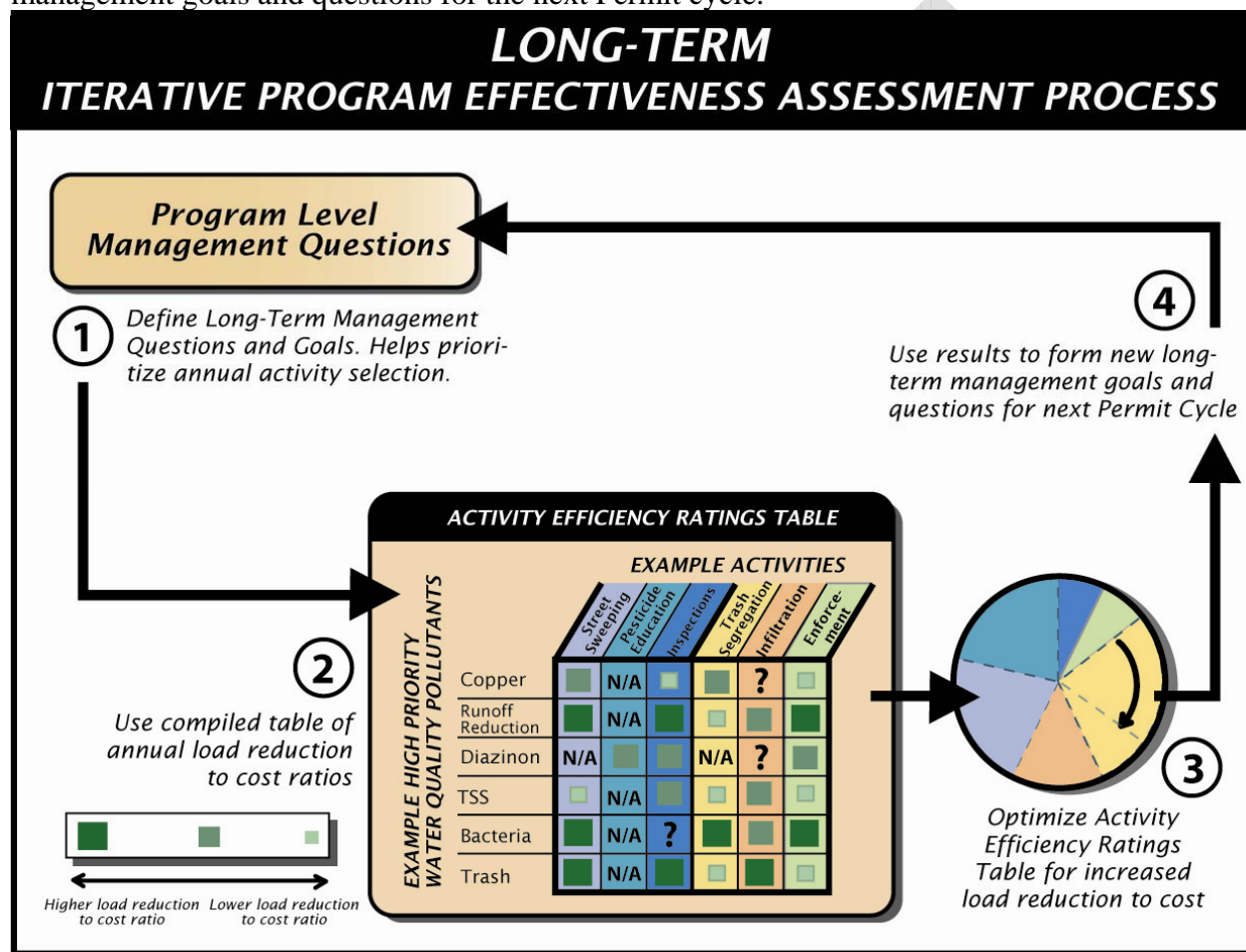


Figure V-4: Long-Term Program Effectiveness Assessment Process

5.2.3.3 Definitions

- **Efficiency:** A measure of how well an activity helps reduce pollutant loads divided by the amount of money spent to implement the activity (measured in load reduction to cost ratio)
- **Efficiency Activity Ratings Table:** Database of load reduction to cost ratios

- Effectiveness: Determination of whether or not implementation of an activity resulted in a load reduction
- Load Reduction to Cost Ratio: Standard unit of measure, and is used in reporting efficiency of City activities
- Management Questions: Questions developed as a basis for assessment, they serve as a framework to design activities and programs, and data are collected to answer them
- Pilot Activities: Special studies implemented through the WURMP program to determine effectiveness at reducing pollutant loads on a small scale, before implementing watershed-wide.
- Significant Activities: Significant activities are JURMP Permit compliance activities that undergo additional study to gather further effectiveness and efficiency information.

5.3 TMDL and ASBS BMP Implementation Plans

No TMDLs are currently in effect for the Mission Bay & La Jolla WMA. However, the following water bodies in the WMA are currently listed as impaired per Section 303(d) of the Clean Water Act:

- Mission Bay: Bacteria indicators, lead, eutrophication
- Tecolote Creek: Bacteria indicators, cadmium, copper, lead, zinc, toxicity

As TMDLs are developed to address the issues for the above water bodies, the City will work to integrate TMDL efforts with WURMP efforts to maximize resources and efficiency. TMDL BMP implementation plans affecting the Mission Bay & La Jolla WMA will be described in this section and reported in the Mission Bay & La Jolla WURMP annual reports.

In addition, it is important to note that the City's Strategic Plan, which comprehensively considers all current and anticipated regulations, including ASBS protection, is being implemented in this WMA. Through the implementation of pilot activities, the City will refine and maximize the efficiency of activities, which will help the City to implement the best suite of proven efficient activities when the TMDL regulations are adopted.

Should a TMDL come into effect within the Mission Bay & La Jolla WMA, the City will meet Permit requirements by reporting the following in its Mission Bay & La Jolla WURMP annual reports:

Describe all TMDL activities implemented (including BMP Implementation Plan or equivalent plan activities) for each approved TMDL in the watershed. The description shall include:

- a. Any additional source identification information;
- b. The number, type, location, and other relevant information about BMP implementation, including any expanded or better tailored BMPs necessary to meet the WLAs;
- c. Updates in the BMP implementation prioritization and schedule;
- d. An assessment of the effectiveness of the BMP Implementation Plan, and;
- e. A discussion of the progress to date in meeting the TMDL Numeric Targets and WLAs, which incorporates the results of the effectiveness assessment, compliance monitoring, and an evaluation of additional efforts needed to date.

Section 6 Conclusions and Recommendations

6.1 Conclusions

The goal of this WURMP is guide the City's efforts to protect and improve the surface water quality of Mission Bay, the Pacific Ocean shoreline, and associated creeks and water bodies in the WMA. The City will continue to refine and augment the Mission Bay & La Jolla WURMP over the long term as it improves its understanding of the complex issues affecting the Mission Bay & La Jolla WMA. Such refinement and augmentation are supported by the iterative process used to develop and implement the WURMP, which establishes mechanisms for the Storm Water Division to coordinate with stakeholders to evaluate priorities, improve coordination, assess program goals, and allocate finite resources in a cost-effective manner.

Adaptive management is key to making the iterative process work. Adaptive management allows adjustments in management direction as new information becomes available. The combination of natural variability in the hydrologic cycle and the uncertainty associated with a complex system requires that watershed managers be flexible enough to modify implementation approaches based on progress and available information. Watershed characteristics, sources of pollutants, and management approaches are unique, and, therefore, management efforts may not proceed exactly as planned. Adaptive management does not mean that the watershed's water quality goals would be modified based upon lack of progress, but that the results would be used to modify management policies, strategies, practices, and operation and maintenance procedures to reach goals.

Even though priorities are being addressed in a focused manner, it still takes time for management activities to produce quantifiable improvements in water quality. As such, the WURMP includes performance measures and a review mechanism. Performance data collected in subsequent cycles will be used to determine the effectiveness of previous management activities.

The Mission Bay & La Jolla WURMP presents part of the City's long-term efforts to protect and enhance the water quality of the WMA using a watershed-based approach. The WURMP will continue to be developed with stakeholder participation and be integrated with other non-City projects, as appropriate.

6.2 Recommendations

The following presents the City's broad recommendations on continued refinement of the Mission Bay & La Jolla WURMP:

- **Refine and Improve Water Quality Activities.** The City is continually developing and refining its list of watershed activities to more efficiently protect and improve water quality. Table IV-1 in Section 4 of this WURMP represents the City's plan to address the current priority water quality problems in the WMA. Of course, implementation of some of these activities is ultimately subject to funding availability and to modifications based on the results of water quality and effectiveness assessment yet to be performed. The City

will use the best available data to refine and improve the efficiency of its watershed activities.

- **Expand Knowledge of Pollutant Sources.** The City has developed as part of this program an approach to expand understanding of the water quality issues in the Mission Bay and La Jolla WMA (i.e., the pollutant sources and magnitude of the issues), so that the City, other entities, and interested members of the public (its watershed partners) can make more informed decisions and actions. The City's approach for increasing its level of understanding involves two prongs:
 1. *Continue to gather additional water quality monitoring data suitable for conducting assessment at the watershed and subwatershed levels.* In order to effectively assess water quality at both the watershed and subwatershed levels, additional monitoring during both the dry and wet seasons is needed throughout the WMA so that priority water quality problems may be accurately identified, characterized, and prioritized.
 2. *Continue to research and characterize pollutant sources and their loading potential.* A more positive identification of sources and their loading potential would allow the City to modify program activities wisely and devote scarce resources to target specifically the most troublesome sources using the most efficient BMPs.

To address the above, the City will continue to coordinate with its Copermittees to identify and fill data gaps. Already, the Model Watershed Strategy contributes to addressing this issue by guiding the Copermittees through a process that identifies HAs within the WMAs that need additional monitoring and source characterization activities before load reduction and source abatement activities can be implemented in those HAs.

To follow up on the data gaps identified by going through the Model Watershed Strategy, the City will continue with the other Copermittees to implement a coordinated program of source identification studies on a regionally. Section 4 of this WURMP describes the watershed-based facility inspections that the City plans on implementing. Data gathered from these inspections can be used to better characterize sources.

In addition, the Copermittees are set to augment their jurisdictional and collective monitoring programs to address new Municipal Storm Water Permit requirements. This augmentation will further help the City characterize the Mission Bay & La Jolla WMA.

- **Refine and Improve Effectiveness Assessment.** The City has developed a framework to assess the efficiency of its JURMP and WURMP activities. It is built upon the premise that individual activities should be optimized with regards to efficiency, which is defined as pollutant load reduction divided by cost. By knowing the efficiency rates of activities, the City can implement the best suite of activities to maximize load reduction using given resources. Therefore, the City's assessment framework directs activity implementation and assessment to be designed in a manner that will allow for the investigation and verification of efficiency rates. A combined assessment of the different efficiency rates to

come up with the best suite of activities to maximize load reduction will then feed into program assessment to determine if the program goal and objectives have been met. The City will continue to refine and improve this framework through implementation, which is anticipated to lead to more efficient activity implementation and better program results.

6.3 WURMP Update Process

Progress on the implementation of the Mission Bay & La Jolla WURMP will be assessed each fiscal year, and the results will be documented in an annual report following a regionally standardized table of contents and to be appended to this WURMP. The annual report will describe and justify any changes to the WURMP.

Efforts and reporting related to ASBS protection and TMDL requirements will also be integrated into the WURMP to provide a comprehensive overview of the City's total efforts in the WMA to enhance and protect surface water quality.

References

California Regional Water Quality Control Board, San Diego Region. *Order No. R9-2007-0001, NPDES Permit No. CAS0108758; Waste Discharge Requirements for Discharges of Urban Runoff from the Municipal Separate Storm Sewer Systems (MS4s) Draining the Watersheds of the County of San Diego, the Incorporated Cities of San Diego County, the San Diego Unified Port District, and the San Diego Regional Airport Authority*. January 2007.

City of San Diego and Weston Solutions, Inc. *Strategic Plan for Watershed Activity Implementation*. July 2007.

San Diego Municipal Storm Water Copermittees. *A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs*. October 2003.

Weston Solutions, Inc., Larry Walker Associates, and Mikhail Ogawa Engineering. *San Diego Storm Water Copermittees Jurisdictional Urban Runoff Management Program Baseline Long-Term Effectiveness Assessment*. August 2005.

Weston Solutions, Inc. *San Diego County Municipal Copermittees 2006–2007 Urban Runoff Monitoring Report*. December 2005.

Appendix A

Prioritized Menu of Potential Watershed Activities

Prioritized Menu of Watershed Activities

I. Tier I: *Pollution Prevention and Source Control*

- A. **Basin Plan Beneficial Use Designation Correction***: Identify and recommend obsolete/inaccurate Beneficial Use (BU) designations be removed from the Basin Plan to allow for concentration of City efforts on achievable BU designation restoration and protection
- B. **Enhanced Development Standards***: Review SUSMP and City design standards for new developments, redevelopments, roadway improvements, and parking lots for potential incorporation of LID standards where applicable and based on geotechnical study and analysis of infiltration rates and down-gradient seepage and slope stability
- C. **Product Substitution**: Identify products whose use contribute to pollutant loading and water quality degradation; coordinate with appropriate industry groups to implement voluntary movement or legislation towards use of substitute products less harmful to water quality
- D. **Watershed Advertisement***: Purchase ad space/time (billboards, transit shelters, radio, television, print) to broadcast messages promoting specific water quality–friendly behaviors to address identified high priority water quality problems
- E. **Targeted Outreach Materials***: Develop outreach materials that are pollutant-, source-, activity-, and audience-specific and distribute strategically to achieve increased awareness of urban runoff pollution and elicit appropriate behavioral changes
- F. **LID Construction Outreach***: Inform public of water quality–related capital improvement projects coupled with messages promoting specific water quality–friendly behaviors to address identified high priority water quality problems in project area
- G. **Municipal Code Modification**: Review and update ordinances to promote water quality–friendly behaviors
- H. **Targeted Enforcement**: Focus enforcement efforts by some criteria (e.g., land use, facility type, activity, geography, audience, etc.) to address identified high priority water problems
- I. **Targeted Facility Inspections (with education/outreach)**: Identify likely pollutant source facilities based on geospatial analysis of facility locations and monitoring data to focus facility inspections and tailor education/outreach efforts to those problem facilities
- J. **Community-Based Social Marketing Pilot Studies**: Research and select specific behaviors among businesses and residents that are detrimental to water quality and identify factors sustaining those behaviors; develop pilot education and outreach programs that specifically address those factors to determine which programs are most effective in eliciting behavioral changes for broader implementation

Prioritized Menu of Watershed Activities

- K. **Inspection-Generated Enforcement**: Identify likely pollutant source facilities based on geospatial analysis of facility locations and monitoring data to focus storm water–associated inspections and enforcement against problem facilities
- L. **Enforcement Referrals**: Identify problem facilities and activities exempt from Municipal Code enforcement/prosecution (e.g., schools and upstream sources outside of City) and refer to appropriate agency or jurisdiction for corrective action
- M. **Doggie Bag Dispenser Installation**: Identify areas with pet waste problems and install dispensers/promote pet waste collection to reduce bacterial loading

II. ***Tier II: Runoff Volume and Pollutant Reduction***

- A. **Shoreline Kelp Removal**^{*}: Coordinate with Park and Recreation Department to remove kelp from shoreline locations difficult to access by regularly used tractor rakes/sweepers to reduce bacterial host sites and bacterial loading
- B. **Trash/Debris Cleanup**: Sponsor local organizations' cleanup efforts to remove litter from public areas and waterways before being washed out by runoff into local water bodies
- C. **Homeless Encampment Removal**: Sponsor local organization efforts to identify and eradicate illegal human settlement camps along water bodies impaired for bacteria, metals, and trash
- D. **Targeted Street Sweeping**: Use specialized street sweepers and/or increase street sweeping efforts in areas identified as metals and trash high loading areas due high volumes of vehicular and human traffic and activity to reduce the accumulation of metals and trash before washed into MS4 and local water bodies via runoff
- E. **Smart Irrigation Control Incentive Program**: Implement program to disseminate information and promote installation of devices through rebates or giveaways to reduce over-irrigation and prevent irrigation flows from leaving landscaped areas, thereby reducing dry weather runoff volume with capacity to convey pollutants
- F. **Downspout Redirection Incentive Program**: Implement program to disseminate information and promote redirection of downspouts to landscaped areas for infiltration of roof runoff, thereby reducing runoff volume with capacity to convey pollutants
- G. **Rain Barrel Incentive Program**: Implement program to disseminate information and promote installation of rain water collection containers through rebates or giveaways to harvest rain water for landscaping irrigation and other non-potable uses, thereby reducing runoff volume with capacity to convey pollutants
- H. **Roof Rain Water Harvesting/Reuse Incentive Program**: Disseminate information to promote installation of roof and plumbing systems to capture rain water for non-potable reuse within dwellings, thereby reducing runoff volume with capacity to convey pollutants; identify municipal facilities to pilot and study such systems

Prioritized Menu of Watershed Activities

- I. **Inlet Trash/Debris Segregation BMP**: In conjunction with targeted street sweeping, install inlet devices to capture trash/debris prior to conveyance into local water bodies
 - J. **Green Street – Infiltration**: Replace sidewalks and asphalt paving with porous concrete sidewalks and porous asphalt paving and install planter boxes along residential right of ways in high pollutant loading areas to allow urban runoff to infiltrate into the ground, thereby reducing runoff volume and removing pollutants from the “first flush” of urban runoff
 - K. **Green Mall – Infiltration**: Replace sidewalks and asphalt paving with porous concrete sidewalks and porous asphalt paving and install planter boxes along commercial/industrial right of ways in high pollutant loading areas to allow urban runoff to infiltrate into the ground, thereby reducing runoff volume and removing pollutants from the “first flush” of urban runoff
 - L. **Green Lot – Infiltration**: Replace asphalt paving of parking lots with porous asphalt paving and install planter boxes in high pollutant loading areas to allow urban runoff to infiltrate into the ground, thereby reducing runoff volume and removing pollutants from the “first flush” of urban runoff
 - M. **Infiltration Vault/Pit Installation**: Install underground vaults/pits with associated headworks to capture and store urban runoff and allow it to infiltrate into the ground, thereby reducing runoff volume and removing pollutants from the “first flush” of urban runoff
- III. ***Tier III: Runoff Treatment***
- A. **Bacteria Treatment BMP**: Install devices or facilities to remove bacteria from runoff before discharge from MS4 and into receiving water bodies
 - B. **Dry Weather Diversion**: Install inlet system to redirect dry weather runoff into sewage system for treatment instead of directly discharging often pollutant-laden dry weather and “first flush” flows into receiving water bodies
 - C. **Limited Low-Flow Storm Drain Inlet Multi-Pollutant Treatment System**: Install inlet devices to remove gross solids and filter other pollutants, such as oil and bacteria, from low-flow runoff before discharge into MS4
 - D. **Small-Scale Storm Flow Storage and Multi-Pollutant Treatment System**: Install devices primarily on City property to capture and temporarily store storm flows to allow for settling of pollutants and then treat/filter water before discharge
 - E. **Large-Scale Storm Flow Storm and Multi-Pollutant Treatment System**: Construct comprehensive and large-scale system on City and/or private property to capture and temporarily store large amounts of storm flows for settling of pollutants and then treat/filter water before discharge
 - F. **Hydro-Modification Management BMP**: Determine targeted watershed and prioritized drainage areas for erosion and sediment controls based on comparison of estimated “undeveloped” sediment loadings versus current load reduction requirements and requirements for reduction in hydro-modification of downstream channels

Prioritized Menu of Watershed Activities

- G. **Erosion/Sediment Control BMP**: Identify specific sites with erosion/sediment problems and engineer and construct site-specific structural solutions that reduce runoff flow velocity and allow for settling of suspended solids
- H. **Detention Basin O&M Sponsorship/Endowment**: Coordinate with non-profit stakeholders to establish endowments to sponsor and fund the operation and maintenance of detention basins to control sediment loading

*Not considered load reduction/source abatement activity

Appendix B

5-Year Plan of Action Matrix

Mission Bay & La Jolla Watershed Management Area
Five-Year Plan of Action Matrix
Water Quality and Education Activities

ID Number	Activity	Pollutant Categories										Activity Type					Schedule				
		Bacteria*	Dissolved Minerals	Gross Pollutants	Heavy Metals*	Nutrients*	Oil & Grease	Organics	Pesticides	Sediment	Trash	Monitoring	Source Investigation	Load Reduction	Source Abatement	Education	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
MB-1001	Alpha Project Trash Cleanups	X									X			X			I A				
MB-1002	ILACSD Trash Cleanup Sponsorship	X									X			X			I A	I A	I A	I A	I A
MB-1003	SDCK Trash Cleanup Sponsorship	X									X			X			I A	I A	I A	I A	I A
MB-1004	Targeted Animal-Related Facility Inspections	X				X							X	X		X	P I A	P I A	P I A	P I A	
MB-1005	Targeted Auto-Related Facility Inspections				X								X	X		X	P I A	P I A			
MB-1006	Targeted Landscaping-Related Facility Inspections	X				X							X	X		X	P I A	P I A	P I A	P I A	P I A
MB-1007	Targeted Municipal Facility Inspections	X			X	X							X	X		X	P I A	P I A	P I A	P I A	P I A
MB-1008	Targeted Residential Activity Inspections	X			X	X							X	X		X	P	P I A	P I A		
MB-1009	Targeted Restaurant Facility Inspections	X											X	X		X	P I A	P I A			
MB-1010	Targeted Street Sweeping				X						X		X	X			P I	I A	I A		
MB-1011	Municipal Rain Barrel Installation	X				X	X		X	X				X			P I A	I A			
MB-1012	Hydrodynamic Separator Installation	X								X	X			X			P	P	I A	A	
MB-1013	LJ Dry Weather Flow Diversions	X												X			P	P	I	A	
MB-1014	LJ-MB Dry Weather Flow Diversions & Flap Gates	X								X				X			P	P	P		
MB-1015	Kellogg Park Green Lot BMP Retrofit	X			X	X								X			P	P	P I	I A	A
MB-1016	Mt. Abernathy Green Street BMP Retrofit	X			X	X								X			P	P	P I	I A	A
MB-1017	Infiltration LID BMP #1	X			X	X								X			P	P	I	A	
MB-1018	Infiltration LID BMP #2	X			X	X								X			P	P	P	I A	A
MB-2001	Karma/Karma Second Chance Public Service Announcements	X		X							X					X	I	I A	I A	I A	I A
MB-2002	AdMobile Mobile Advertising (General; Bacteria)	X		X	X		X		X	X	X					X	I A	I A	I A	I A	I A
MB-2003	Business and Residential CBSM Pilots (La Jolla)	X									X		X	X		X	P I A	P I A	I A		
MB-2004	Business CBSM Pilot (Genessee)	X		X	X		X	X		X	X		X	X		X		P	P I A	I A	I A
MB-2005	Mt. Abernathy LID "Green Street" Outreach	X		X												X	P	P	I A	I A	
MB-3001	Tecolote Creek Bacterial Source ID Study	X											X				I A	A			

* High Priority Pollutants

Planning (P)
Implementation (I)
Assessment (A)

Appendix C

Activity Summary Sheets

TITLE: Alpha Project for the Homeless, Inc. Trash Cleanups
ID NUMBER: MB-1001

ACTIVITY DESCRIPTION

The City's Storm Water Pollution Prevention Division has partnered with Alpha Project for the Homeless, Inc., through a Memorandum of Understanding to conduct trash and debris cleanups and potentially homeless encampment removals throughout the City's jurisdiction in various watersheds in FY 2007 and FY 2008.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with Alpha Project to ensure that sites within the Mission Bay & La Jolla WMA are included in the list of sites to target for cleanups in FY 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Alpha Project for the Homeless, Inc.

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria as a high priority water quality problem in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address it. Cleanups by Alpha Project will result in load reduction of trash and debris directly and of bacteria indirectly.

EXPECTED BENEFITS

Although the cleanups conducted by Alpha Project focus on debris removal, it also addresses bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website¹ states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the Mission Bay & La Jolla WMA through cleanup events, bacteria loading is reduced.

EFFECTIVENESS MEASUREMENTS

Management Questions:	<ul style="list-style-type: none">• What is the load reduction associated with sponsorship?• What is the efficiency of trash cleanup? (\$/person or \$/ton collected)
Targeted Measurable Outcome(s)	<ul style="list-style-type: none">• Achieve load reduction of trash (any amount) due to trash cleanup sponsorship

¹ <http://www.epa.gov/owow/oceans/debris/>

Assessment Method(s)	<ul style="list-style-type: none"> • Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data:	<ul style="list-style-type: none"> • Money spent (USD) (Outcome Level 1 and 2) • Tons of trash (Outcome Level 4) • Number of participants (Outcome Level 1) • Compliance (yes/no) (Outcome Level 1)

TITLE: I Love A Clean San Diego Trash Cleanup Sponsorship
ID NUMBER: MB-1002

ACTIVITY DESCRIPTION

Each spring, I Love A Clean San Diego (ILACSD) conducts its Creek to Bay Cleanup event to target various inland and coastal sites in San Diego County in need of trash and debris removal. ILACSD recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Creek to Bay Cleanup has historically been held in April of each year. Prior to that month, the City will coordinate with ILACSD staff to ensure that sites within the Mission Bay & La Jolla WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- ILACSD
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria as a high priority water quality problem in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address it. Sponsorship of Creek to Bay will result in load reduction of trash and debris directly and of bacteria indirectly.

EXPECTED BENEFITS

Although Creek to Bay Cleanup is focused on debris removal, it also addresses bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website¹ states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the Mission Bay & La Jolla WMA through cleanup events, bacteria loading is reduced.

¹ <http://www.epa.gov/owow/oceans/debris/>

EFFECTIVENESS MEASUREMENTS

Management Questions:	<ul style="list-style-type: none">• What is the load reduction associated with sponsorship?• What is the efficiency of trash cleanup? (\$/person or \$/ton collected)
Targeted Measurable Outcome(s)	<ul style="list-style-type: none">• Achieve load reduction of trash (any amount) due to trash cleanup sponsorship
Assessment Method(s)	<ul style="list-style-type: none">• Tabulation (e.g., number of participants)• Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data:	<ul style="list-style-type: none">• Money spent (USD) (Outcome Level 1 and 2)• Tons of trash (Outcome Level 4)• Number of participants (Outcome Level 1)• Compliance (yes/no) (Outcome Level 1)

TITLE: San Diego Coastkeeper Trash Cleanup Sponsorship
ID NUMBER: MB-1003

ACTIVITY DESCRIPTION

Each fall, San Diego Coastkeeper conducts the Coastal Cleanup Day event to target various inland and coastal sites in San Diego County in need of trash and debris removal. Coastkeeper recruits and organizes site captains and groups of volunteers for each site. A media center is also designated, which promotes environmental stewardship, including the importance of keeping litter and debris from spoiling the region's watersheds. The whole event is marketed throughout San Diego County through a variety of media, including television, radio public service announcements, newspapers, newsletters, electronic mail, bulletin boards, community outreach activities, calendar listings, and word of mouth.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Coastal Cleanup Day has historically been held in September of each year. Prior to that month, the City will coordinate with Coastkeeper staff to ensure that sites within the Mission Bay & La Jolla WMA are included in the list for cleanups and that proper sponsorship arrangements are made.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- I Love A Clean San Diego
- Volunteers from general public

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria as a high priority water quality problem in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address it. Sponsorship of Coastal Cleanup Day will result in load reduction of trash and debris directly and of bacteria indirectly.

EXPECTED BENEFITS

Although Coastal Cleanup Day is focused on debris removal, it also addresses bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website¹ states that debris may be contaminated by pathogens that have

¹ <http://www.epa.gov/owow/oceans/debris/>

adverse effects on humans. By reducing the amount of trash and debris in the Mission Bay & La Jolla WMA through cleanup events, bacteria loading is reduced.

EFFECTIVENESS MEASUREMENTS

Management Questions:	<ul style="list-style-type: none"> • What is the load reduction associated with sponsorship? • What is the efficiency of trash cleanup? (\$/person or \$/ton collected)
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • Achieve load reduction of trash (any amount) due to trash cleanup sponsorship
Assessment Method(s)	<ul style="list-style-type: none"> • Tabulation (e.g., number of participants) • Quantification (e.g., pounds of trash collected)
Assessment Measures, Assessment Outcome Levels & Data:	<ul style="list-style-type: none"> • Money spent (USD) (Outcome Level 1 and 2) • Tons of trash (Outcome Level 4) • Number of participants (Outcome Level 1) • Compliance (yes/no) (Outcome Level 1)

TITLE: Targeted Animal-Related Facility Inspections
ID NUMBER: MB-1004

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target animal-related facilities within the Mission Bay & La Jolla WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at animal-related facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the Mission Bay & La Jolla WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experience gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2011.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria and nutrients.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at animal-related facilities. Knowledge and experience gained through this activity would help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	<ul style="list-style-type: none"> • Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation effect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate (over time)
Assessment Method(s)	<ul style="list-style-type: none"> • Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	<ul style="list-style-type: none"> • Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: Targeted Auto-Related Facility Inspections
ID NUMBER: MB-1005

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target auto-related facilities within the Mission Bay & La Jolla WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at auto-related facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the Mission Bay & La Jolla WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experience gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and potential TMDL requirements.

TMDL APPLICABILITY

- N/A

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2009.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies metals as a high priority water quality problem in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with metals.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with metals at auto-related facilities. Knowledge and experience gained through this activity will help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	<ul style="list-style-type: none">• Do inspections increase rate of BMP implementation?• Does increased rate of BMP implementation effect load reduction?• What is the optimal frequency of inspection (point of diminishing returns)?• Are spot inspections more effective than scheduled inspections?• Does enforcement alter future behavior (implementing BMPs)?• Does education increase rate of BMP implementation?• How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	<ul style="list-style-type: none">• Achieve load reduction from optimized inspection rate• Achieve greater BMP implementation from optimized inspection rate (over time)
Assessment Method(s)	<ul style="list-style-type: none">• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections)• Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction)• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)• Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials)• Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	<ul style="list-style-type: none">• Number of inspections (spot and scheduled) (Outcome Level 1)• Number of BMPs implemented (Outcome Level 1)• Change (%) in BMP implementation pre and post-education (Outcome Level 3)• Number of missing BMPs (Outcome Level 1)• Number of follow-up inspections (Outcome Level 1)• Number of enforcement follow-ups (Outcome Level 1)• Number of educational information items passed out (Outcome Level 1)• How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1)• Literature review or other information to provide data to estimate load reductions (Outcome Level 3)• Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: Targeted Landscaping-Related Facility Inspections
ID NUMBER: MB-1006

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target landscaping-related facilities within the Mission Bay & La Jolla WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at landscaping-related facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the Mission Bay & La Jolla WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2012.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria and nutrients.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at landscaping-related facilities. Knowledge and experience gained through this activity would help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	<ul style="list-style-type: none"> • Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation effect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate (over time)
Assessment Method(s)	<ul style="list-style-type: none"> • Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	<ul style="list-style-type: none"> • Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: Targeted Municipal Facility Inspections
ID NUMBER: MB-1007

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target municipal facilities within the Mission Bay & La Jolla WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at municipal facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the Mission Bay & La Jolla WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experience gained through this activity to optimize the City's municipal facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2012.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

- Metals

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria, nutrients, and metals as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria, nutrients, and metals at municipal facilities.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at municipal facilities. Knowledge and experience gained through this activity would help the City optimize its municipal facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	<ul style="list-style-type: none"> • Do inspections increase rate of BMP implementation? • Does increased rate of BMP implementation effect load reduction? • What is the optimal frequency of inspection (point of diminishing returns)? • Are spot inspections more effective than scheduled inspections? • Does enforcement alter future behavior (implementing BMPs)? • Does education increase rate of BMP implementation? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate (over time)
Assessment Method(s)	<ul style="list-style-type: none"> • Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections) • Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	<ul style="list-style-type: none"> • Number of inspections (spot and scheduled) (Outcome Level 1) • Number of BMPs implemented (Outcome Level 1) • Change (%) in BMP implementation pre and post-education (Outcome Level 3) • Number of missing BMPs (Outcome Level 1) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: Targeted Residential Activity Characterization
ID NUMBER: MB-1008

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing an activity to target behaviors at residential sites within the Mission Bay & La Jolla WMA. The purpose of the activity is to:

- Determine the most efficient type of effort to ensure proper BMP implementation and reduce pollutant loading (e.g., education vs. incentives vs. monetary fines)
- Determine the most efficient combination of “enforcement” action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/materials distribution vs. monetary fines vs. onsite direct interactions vs. Community Based Social Marketing methodology)
- Observe and characterize residential sites/activities regarding their contribution to water quality problems to better direct focused education/outreach and enforcement efforts
- Track and analyze observations and efforts to estimate load reductions resulting thereby

The Storm Water Division will delineate a specific area within the Mission Bay & La Jolla WMA to conduct the effort based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Specific residential activities to observe and characterize will be determined. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experienced gained through this activity to optimize the City’s education and outreach efforts and jurisdictional residential program to meet Municipal Permit, ASBS protection, and TMDL requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning and development began in July 2007 and are anticipated to continue through FY 2008. The Storm Water Division anticipates implementation to occur through FY 2009 and FY 2010.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals

- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this targeted residential activity characterization will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria, metals, and nutrients.

EXPECTED BENEFITS

This targeted residential activity characterization will contribute to addressing discharges, correcting behaviors, and abating sources associated with bacteria, metals, and nutrients at residential sites.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Implementation* (July 2007). Knowledge and experience gained through this activity will help the City optimize its education and outreach efforts and jurisdictional residential program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	<ul style="list-style-type: none"> • Does education for effects of specific residential activities result in fewer observed instances of the activity? • Does behavior change effect load reduction? • What is the optimal frequency of education and outreach (point of diminishing returns)? • Does enforcement alter future behavior (fewer observed instances of target behavior)? • How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • Achieve load reduction from optimized inspection rate • Achieve greater BMP implementation from optimized inspection rate (over time)
Assessment Method(s)	<ul style="list-style-type: none"> • Inspections (e.g., track number of target behaviors observed, decrease in observed behavior, number of follow-up inspections) • Quantification (e.g., use frequency of observed behavior to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	<ul style="list-style-type: none"> • Number of inspections (spot and scheduled) (Outcome Level 1) • Number of outreach materials handed out (Outcome Level 1) • Change (%) in target behavior pre and post-education (Outcome Level 3) • Number of follow-up inspections (Outcome Level 1) • Number of enforcement follow-ups (Outcome Level 1) • How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: Targeted Restaurant Facility Inspections
ID NUMBER: MB-1009

ACTIVITY DESCRIPTION

The Storm Water Pollution Prevention Division (Storm Water Division) is developing a focused inspection activity to target restaurant facilities within the Mission Bay & La Jolla WMA. The purpose of the activity is to:

- Determine the most efficient frequency of inspections to ensure proper BMP implementation and reduce pollutant loading (e.g., once vs. twice per fiscal year)
- Determine the most efficient type of inspection to ensure proper BMP implementation and reduce pollutant loading (e.g., random inspections vs. scheduled inspections)
- Determine the most efficient combination of enforcement action to ensure proper BMP implementation and reduce pollutant loading (e.g., education/flyers vs. monetary fines vs. onsite direct interactions)
- Characterize activities at restaurant facilities to determine which activities cause the greatest pollutant discharges to better direct focused education/outreach and enforcement efforts
- Track and analyze inspection and enforcement actions to estimate load reductions resulting from inspections

The Storm Water Division will delineate a specific area within the Mission Bay & La Jolla WMA to conduct the targeted inspections based on factors, such as monitoring data, facility clustering, and proximity to other watershed activities being conducted. Discharges cleaned up, behaviors corrected, and sources abated will also be reported. The Storm Water Division anticipates using the knowledge and experience gained through this activity to optimize the City's jurisdictional industrial and commercial facility inspection program to meet Municipal Permit and TMDL requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Activity planning began in July 2007. The Storm Water Division anticipates selecting and hiring a consultant on board by the end of calendar year 2007 to help develop and implement the activity within FY 2008 through FY 2009.

PARTICIPATING WATERSHED COOPERATIVE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria as a high priority water quality problem in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address it. Implementation of this focused inspection activity will contribute to addressing discharges, correct behaviors, and abate sources associated with bacteria.

EXPECTED BENEFITS

This focused inspection activity will contribute to reducing discharges, characterizing activities, correcting behaviors, and abating sources associated with bacteria at restaurant facilities. Knowledge and experience gained through this activity would help the City optimize its jurisdictional industrial and commercial facility inspection program.

EFFECTIVENESS MEASUREMENTS

Management Questions:	<ul style="list-style-type: none">• Do inspections increase rate of BMP implementation?• Does increased rate of BMP implementation effect load reduction?• What is the optimal frequency of inspection (point of diminishing returns)?• Are spot inspections more effective than scheduled inspections?• Does enforcement alter future behavior (implementing BMPs)?• Does education increase rate of BMP implementation?• How can an estimate of load reduction be made from inspection data?
Targeted Measurable Outcome(s)	<ul style="list-style-type: none">• Achieve load reduction from optimized inspection rate• Achieve greater BMP implementation from optimized inspection rate (over time)
Assessment Method(s)	<ul style="list-style-type: none">• Inspections (e.g., track number of BMPs implemented, increased number of BMPs, number of follow-up inspections)• Quantification (e.g., use frequency of BMP implementation to calculate estimated load reduction)• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)• Tabulation (e.g., amount of money spent on inspections, amount of money spent on educational materials)• Reporting (e.g., estimates of load reduction for BMPs from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	<ul style="list-style-type: none">• Number of inspections (spot and scheduled) (Outcome Level 1)• Number of BMPs implemented (Outcome Level 1)• Change (%) in BMP implementation pre and post-education (Outcome Level 3)• Number of missing BMPs (Outcome Level 1)• Number of follow-up inspections (Outcome Level 1)• Number of enforcement follow-ups (Outcome Level 1)• Number of educational information items passed out (Outcome Level 1)• How much money spent on inspections (follow ups, initial inspections, enforcement actions)? (Outcome Level 1)• Literature review or other information to provide data to estimate load reductions (Outcome Level 3)• Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: ASBS and Tecolote Watershed Street Sweeping Project
ID NUMBER: MB-1010

ACTIVITY DESCRIPTION

The City's Storm Water Pollution Prevention Division (Storm Water Division) is coordinating with the City's Street Division to conduct a 24-month street sweeping effectiveness study in La Jolla and Clairemont communities. The study will investigate the effectiveness of vacuum-assisted street sweepers compared to mechanical sweepers in reducing the accumulation of metals on City streets and whether changes to the current street sweeping schedule (baseline) will assist the City in attaining its water quality goals. The City's objective in conducting this study is to reduce the street accumulation of debris containing metals that may then migrate via storm water and other urban runoff to the storm water conveyance system and eventually into impaired receiving waters. The study includes the purchase of two types of vacuum-assisted sweepers, the dedication of operators; assignment of the sweepers to designated routes within identified priority areas; and a monitoring program to assess the effectiveness of the sweepers and frequency. This project is being done in coordination with a similar one in the Chollas Creek Watershed.

The City is using the prioritization process that is outlined in its *Strategic Plan for Watershed Activity Implementation* (July 2007) to target areas within the La Jolla and Clairemont communities and simultaneously address Municipal Permit, ASBS, and current and pending TMDL requirements.

TMDL APPLICABILITY

- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in September 2006. The City anticipates sweeping to start within winter 2008 through summer 2010. Debris testing and water quality monitoring will be conducted throughout the project to assess effectiveness in removing metals from City streets.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Metals

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies metals as a high priority water quality problem in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address it. Targeted increased sweeping will target metals on City streets.

EXPECTED BENEFITS

The street sweeping effectiveness study will consist of acquiring two types of top-tier vacuum-assisted street sweeper to operate in the La Jolla and Clairemont communities and assessing their effectiveness in reducing the accumulation of metals on area streets through an effectiveness assessment monitoring program. This study will augment the City's current sweeping efforts in order to also determine the optimum frequency of sweeping, starting at the present baseline schedule, towards reducing the loading of metals. The monitoring program will include simulated wet weather events for both type of vacuum-assisted sweepers and the mechanical sweepers currently used throughout the City. The amount of debris (in pounds) that is removed by sweeper type and frequency will be assessed during dry and wet periods of the year. The composition of the debris removed will be evaluated through analytical analysis and grain size distribution to determine the specific pollutant load reduction achieved by each method and frequency identified in the work plan.

EFFECTIVENESS MEASUREMENTS

Management Questions:	<ul style="list-style-type: none">• Which street sweeping machine is most effective in removing contaminants of concern (mechanical or vacuum-assisted)?• Is sweeping more frequently more effective than less frequent street sweeping in debris removal?• What is the optimal street sweeping frequency/method?• What is the impact of street sweeping on COCs in stormwater runoff?
Targeted Measurable Outcome(s)	<ul style="list-style-type: none">• Load reduction for sediments and metals based on monitoring information• Receiving water quality improvement
Assessment Method(s)	<ul style="list-style-type: none">• Monitoring (e.g., collect data to estimate loads, concentrations of COCs in runoff)• Tabulation (e.g., amount of money to buy vacuum assisted street sweepers)• Quantification (e.g., load estimate comparison between sweeping methods)
Assessment Measures, Assessment Outcome Levels & Data:	<ul style="list-style-type: none">• Tons of debris removed by land use for mechanical and vacuum-assisted sweepers (Outcome Level 4)• Frequency of removal correlated to tons of debris removed (Outcome Level 1 and 4)• Post-sweeping COC concentrations in runoff (Outcome Level 4)• Cost of vacuum-assisted sweepers (Outcome Level 1)• Cost of increased/decreased frequency of sweeping (man-hours, equipment costs, etc) (Outcome Level 1)

TITLE: Municipal Rain Barrel Installation and Downspout Disconnects
ID NUMBER: MB-1011

ACTIVITY DESCRIPTION

This activity will involve the installation of rain barrels and/or the disconnection of downspouts to direct runoff from municipal facility roofs into pervious areas (such as landscaping) for infiltration. Rain barrels, downspout disconnects, and rainwater harvesting/reuse systems help to capture, store, and divert urban runoff to reduce the volume thereof, thus contributing to reduced flooding, erosion, and the contamination of surface water with sediment, fertilizer, metals, and pesticides. In addition, this activity has the added benefit of water conservation; runoff collected and diverted to landscaping would help reduce the amount of potable water needed for irrigation. Roof runoff solutions can be used both in large-scale landscapes, such as municipal buildings, community centers, schools, and commercial sites, as well as in small residential landscapes.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007 and is anticipated to continue until the end of calendar year 2007. Procurement of rain barrels and other items and installation are anticipated to occur from November 2007 through February 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address these high priority water quality problems by reducing runoff volume via capture, retention, and infiltration.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing runoff volume via capture, retention, and eventual infiltration.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (July 2007), which calls for the piloting of rain barrels, downspout disconnects, and rainwater harvesting/reuse systems to reduce urban runoff volume and pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of rain barrels and downspout disconnects as urban runoff pollution controls before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	<ul style="list-style-type: none"> • What is the effectiveness/efficiency of rain barrel/rain-harvesting systems in reducing stormwater runoff volume? • What is the loading reduction of different systems? • Which system is most efficient in collecting and/or diverting rainwater? • Which system results in the largest load reductions?
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • Reduction in pollutant loads due to rain barrel installation
Assessment Method(s)	<ul style="list-style-type: none"> • Monitoring (e.g., load reduction estimation) • Quantification (e.g., calculation of load reductions, or estimates of change) • Tabulation (e.g., number of rain barrel systems installed, amount of money spent) • Reporting (e.g., 3rd party data to estimate load reductions)
Assessment Measures, Assessment Outcome Levels & Data:	<ul style="list-style-type: none"> • Cost of rain barrel systems (Outcome Level 1 and 2) • Cost of maintenance/upkeep (Outcome Level 1 and 2) • Cost of implementation (Outcome Level 1 and 2) • Volume of stormwater captured/diverted (Outcome Level 4) • Concentrations of COCs in rainwater or runoff (measured in rain barrel systems) (Outcome Level 4) • Compare 3rd party data to measured data for load reduction comparisons (Outcome Level 3) • What is the percent capture of the different systems (acres drained) (Outcome Level 4)

TITLE: Hydrodynamic Separator Installation
ID NUMBER: MB-1012

ACTIVITY DESCRIPTION

This activity will involve the installation of a hydrodynamic separator in the Mission Bay & La Jolla WMA to treat dry weather flows. Hydrodynamic separators, or baffle boxes, are composed of a series of chambers that clean contaminated water in two ways. The first chamber collects water and allows contaminants, such as trash and sediment, to settle at the bottom before the water overflows into the following chamber to repeat the process. As water flows from chamber to chamber, it also passes through screens to filter out additional pollutants. Eventually, clean water leaves the device and discharges into designated receiving waters. Exact location of installation will be based on monitoring considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, and project design is anticipated to continue through FY 2009. Construction is anticipated to occur in FY 2010. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Sediment is also identified as a priority water quality problem. Implementation of this activity will address the high priority and priority water quality problems by capturing dry weather flows and slowly releasing them to allow for the settlement of pollutants for later removal.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by capturing dry weather flows and slowly releasing them to allow for the settlement of trash and sediment for later removal.

Also, this activity will address bacteria indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website¹ states that debris may be contaminated by pathogens that have adverse effects on humans. By reducing the amount of trash and debris in the Mission Bay & La Jolla WMA via collection by the hydrodynamic separator, bacteria loading is reduced.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (July 2007), which calls for the piloting of hydrodynamic separators to reduce urban runoff pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of hydrodynamic separators as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	<ul style="list-style-type: none">• Which type of separator provides the most efficient removal of trash and debris?• What is the load reduction efficiency of hydrodynamic separators in reducing trash?• How effective are hydrodynamic retrofits at reducing loads of trash?
Targeted Measurable Outcome(s)	<ul style="list-style-type: none">• Determination of most efficient and effective hydrodynamic separator• Reduction in trash based on amount removed from hydrodynamic separator• Receiving water quality improvement (less observed trash in receiving water downstream)
Assessment Method(s)	<ul style="list-style-type: none">• Inspections (e.g., ensure the retrofit is working as designed)• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)• Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
Assessment Measures, Assessment Outcome Levels & Data:	<ul style="list-style-type: none">• Number of inspections (Outcome Level 1)• Change (%) in load reduction pre and post-implementation (Outcome Level 4)• How much money spent on inspections and maintenance (Outcome Level 1)• Dataset of load contributions for specific activities (Outcome Level 4)

¹ <http://www.epa.gov/owow/oceans/debris/>

TITLE: La Jolla Dry Weather Flow Diversions
ID NUMBER: MB-1013

ACTIVITY DESCRIPTION

The State Water Resources Control Board awarded the City funding in FY07 via the Consolidated Grants Program to install four dry weather flow diversions within the La Jolla Area of Special Biological Significance (ASBS) Watershed. Once installed, the diversions will divert dry weather runoff into the sewer system for treatment before discharging out of storm drain outfalls and into the ASBS.

This project is part of implementation of the La Jolla ASBS Integrated Coastal Watershed Management Plan to meet ASBS protection requirements. The project also conforms to the City's *Strategic Plan for Watershed Activity Implementation* (July 2007), which recommends targeting the La Jolla ASBS Watershed area to simultaneously address Municipal Permit, ASBS protection, and current and pending TMDL requirements.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Design of the diversions is anticipated to occur into FY 2009. Construction is anticipated to occur in FY 2009 or FY 2010.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Installation of dry weather flow diversions will reduce loading of pollutants through runoff capture and treatment.

EXPECTED BENEFITS

Installation of the diversions will reduce pollutant loading by capturing dry weather flows and treating them of pollutants before discharge into receiving waters.

Furthermore, knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of dry weather diversion as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit, ASBS protection, and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	<ul style="list-style-type: none"> • What is the load reduction efficiency of dry weather diversions? • What is the load reduction efficiency for wet weather diversions?
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • 100% diversion of dry weather flows • Meeting wet weather design flow diversion goals • 100% reduction in pollutant loads due to dry weather flow diversion • Detect water quality improvement in receiving waters downstream of diversion
Assessment Method(s)	<ul style="list-style-type: none"> • Inspections (e.g., ensure the diversion is working as designed) • Quantification (e.g., use drainage area information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
Assessment Measures, Assessment Outcome Levels & Data:	<ul style="list-style-type: none"> • Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on inspections and maintenance (Outcome Level 1) • How much money spent on implementation? (Outcome Level 1) • Receiving water quality improvement downstream (Outcome Level 6)

TITLE: Mission Bay Dry Weather Flow Diversions and Flap Gates
ID NUMBER: MB-1014

ACTIVITY DESCRIPTION

The City requested to submit a grant application for funding in FY07 via the Clean Beaches Initiative Program to install dry weather flow diversions and flap gates in two locations in Mission Bay. The intent of the diversions is to divert dry weather runoff into the sewer system for treatment before discharging out of storm drain outfalls and into the adjacent Areas of Special Biological Significance (ASBS). The intent of the flap gate installation is to prevent the intrusion of tidal flows into the targeted storm drains and prevent eelgrass and other materials from accumulating in the storm drain system.

Based on a recent cleaning of the storm drain outfalls proposed for these upgrades, it has been determined that additional work needs to be completed before the flap gates and diversions are installed. It is anticipated that the low flow diversions and flap gates would not be effective if dredging at the outfalls does not first occur due to significant sedimentation within and outside of the outfalls. Dredging would eliminate the potential for 1) flooding upstream due to flap gates sealing shut by sedimentation or 2) flap gates held open by sedimentation and not improve water quality as designed. Therefore, the proposal is currently undergoing revision to analyze the feasibility for including the dredging of the areas outside of the outfalls in Mission Bay.

The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA. The project conforms to the City's *Strategic Plan for Watershed Activity Implementation* (July 2007).

TMDL APPLICABILITY

- San Diego Region Beaches and Creek Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Planning and design of the project is anticipated to occur into FY 2009-2010.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Installation of dry weather flow diversions will reduce loading of pollutants through runoff capture and treatment. Flap gates will prevent tidal waters from washing over accumulated vegetation and trash and debris. Dredging near the outfalls will ensure urban runoff can exit the outfalls with the flap gates instead of being trapped within the pipe and allowing bacteria to grow within the warm waters and sediments contained in the pipe.

EXPECTED BENEFITS

Installation of the diversions will reduce pollutant loading by capturing dry weather flows and treating them of pollutants before discharging into Mission Bay. Flap gates will prevent tidal waters from washing over accumulated vegetation and trash and debris. Dredging near the outfalls will ensure water can exit the pipe and not be trapped within the pipe providing breeding grounds for bacteria.

Furthermore, knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of dry weather diversion and flap gates as urban runoff pollution controls before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit, ASBS protection, and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	<ul style="list-style-type: none"> • What is the load reduction efficiency of dry weather diversions? • What is the load reduction efficiency for wet weather diversions?
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • 100% diversion of dry weather flows • Meeting wet weather design flow diversion goals • 100% reduction in pollutant loads due to dry weather flow diversion • Detect water quality improvement in receiving waters downstream of diversion
Assessment Method(s)	<ul style="list-style-type: none"> • Inspections (e.g., ensure the diversion is working as designed) • Quantification (e.g., use drainage area information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)
Assessment Measures, Assessment Outcome Levels & Data:	<ul style="list-style-type: none"> • Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • How much money spent on inspections and maintenance (Outcome Level 1) • How much money spent on implementation? (Outcome Level 1) • Receiving water quality improvement downstream (Outcome Level 6)

TITLE: Kellogg Park “Green Lot” Infiltration BMP Retrofit
ID NUMBER: MB-1015

ACTIVITY DESCRIPTION

This activity will replace the conventional asphalt of the western half of the Kellogg Park parking lot with porous asphalt to allow for the infiltration of urban runoff. The concrete curb around the existing planter areas and the asphalt paving will be removed, and the parking lot will be graded to drain toward the planter areas. Existing palm trees within the planter areas will remain undisturbed, and new concrete gutters will be placed to convey high flows from the ends of each planter area to the existing catch basins at the north and south ends of the parking lot. Pervious concrete will be placed as the new driving and parking surface within the lot. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit, ASBS, and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL
- Area of Special Biological Significance Nos. 29 and 31

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2006, and project design is anticipated to continue through FY 2010. Construction is anticipated to occur in FY 2011. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City’s Strategic Plan identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing and treating runoff volume of pollutants via infiltration/retention.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (July 2007), which calls for the piloting of infiltration/retention BMPs to reduce urban runoff pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of infiltration/retention as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit, ASBS, and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	<ul style="list-style-type: none">• What is the load reduction efficiency of LID BMP retrofits?• How effective are LID BMP retrofits at reducing loads of priority pollutants?• Does the implementation of LID BMP retrofits result in a detectable receiving water quality improvement?
Targeted Measurable Outcome(s)	<ul style="list-style-type: none">• Reduction in priority pollutant loads• Receiving water quality improvement
Assessment Method(s)	<ul style="list-style-type: none">• Inspections (e.g., ensure the retrofit is working as designed)• Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction)• Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction)• Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials)• Reporting (e.g., estimates of load reduction from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	<ul style="list-style-type: none">• Number of inspections (Outcome Level 1)• Change (%) in load reduction pre and post-implementation (Outcome Level 4)• Number of educational information items passed out (Outcome Level 1)• How much money spent on inspections and maintenance (Outcome Level 1)• Literature review or other information to provide data to estimate load reductions (Outcome Level 3)• Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: Mount Abernathy Avenue “Green Street” Infiltration BMP Retrofit
ID NUMBER: MB-1016

ACTIVITY DESCRIPTION

This activity will involve the construction of vegetated planter areas between the curb and sidewalk to infiltrate runoff. Sidewalks and cul-de-sacs may also be retrofitted with porous paving. Cuts will be made into the existing street curb to allow flows to leave the street paved section and enter the planter areas. Additional cuts will be made to permit high flows to exit the planter areas and re-enter the street section. The planter area will be slightly lower than the street gutter elevation to allow the street to drain into the planters. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2006, and project design is anticipated to continue through FY 2009. Construction is anticipated to occur in FY 2010. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City’s Strategic Plan identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing and treating runoff volume of pollutants via infiltration/retention.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (July 2007), which calls for the piloting of infiltration/retention BMPs to reduce urban runoff pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of infiltration/retention as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	<ul style="list-style-type: none"> • What is the load reduction efficiency of LID BMP retrofits? • How effective are LID BMP retrofits at reducing loads of priority pollutants? • Does the implementation of LID BMP retrofits result in a detectable receiving water quality improvement?
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	<ul style="list-style-type: none"> • Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	<ul style="list-style-type: none"> • Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections and maintenance (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: Infiltration BMP Retrofit #1
ID NUMBER: MB-1017

ACTIVITY DESCRIPTION

This activity will involve the implementation of an infiltration project in the Mission Bay & La Jolla WMA to reduce runoff volume. The activity may be implemented in a municipal parking lot ("Green Mall"), an industrial/commercial right-of-way ("Green Mall"), or a residential right-of-way ("Green Street"). Exact location and type will be based on monitoring and geotechnical considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, and project design is anticipated to continue through FY 2009. Construction is anticipated to occur in FY 2010. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing and treating runoff volume of pollutants via infiltration/retention.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (July 2007), which calls for the piloting of infiltration/retention BMPs to reduce urban runoff pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of infiltration/retention as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	<ul style="list-style-type: none"> • What is the load reduction efficiency of LID BMP retrofits? • How effective are LID BMP retrofits at reducing loads of priority pollutants? • Does the implementation of LID BMP retrofits result in a detectable receiving water quality improvement?
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	<ul style="list-style-type: none"> • Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	<ul style="list-style-type: none"> • Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections and maintenance (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4) • Improvement in MS4 water quality (Outcome Level 5)

TITLE: Infiltration BMP Retrofit #2
ID NUMBER: MB-1018

ACTIVITY DESCRIPTION

This activity will involve the implementation of an infiltration project in the Mission Bay & La Jolla WMA to reduce runoff volume. The activity may be implemented in a municipal parking lot ("Green Mall"), an industrial/commercial right-of-way ("Green Mall"), or a residential right-of-way ("Green Street"). Exact location and type will be based on monitoring and geotechnical considerations, proximity to other BMPs being implemented, site availability, land use, etc. The pollutant load reduction resulting from this activity will contribute to meeting requirements under the Municipal Permit and current and anticipated TMDLs in the receiving waters of the WMA.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Project planning began in July 2007, and project design is anticipated to continue through FY 2010. Construction is anticipated to occur in FY 2011. Water quality monitoring will be conducted before and after construction to assess the effectiveness in reducing runoff volume and pollutant loading.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper – project supporter

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals
- Nutrients

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria, metals, and nutrients as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Implementation of this activity will address the high priority water quality problems by reducing and treating runoff volume via infiltration/retention.

EXPECTED BENEFITS

Implementation of this activity will reduce pollutant loading by reducing and treating runoff volume of pollutants via infiltration/retention.

In addition, implementation of this activity is in accordance with the City's *Strategic Plan for Watershed Activity Implementation* (July 2007), which calls for the piloting of infiltration/retention BMPs to reduce urban runoff pollution. Knowledge and experience gained through this activity will help the City document the benefits, limitations, and challenges of infiltration/retention as an urban runoff pollution control before implementation on a broader scale throughout its jurisdiction in meeting Municipal Permit and TMDL requirements.

EFFECTIVENESS MEASUREMENTS

Management Questions:	<ul style="list-style-type: none"> • What is the load reduction efficiency of LID BMP retrofits? • How effective are LID BMP retrofits at reducing loads of priority pollutants? • Does the implementation of LID BMP retrofits result in a detectable receiving water quality improvement?
Targeted Measurable Outcome(s)	<ul style="list-style-type: none"> • Reduction in priority pollutant loads • Receiving water quality improvement
Assessment Method(s)	<ul style="list-style-type: none"> • Inspections (e.g., ensure the retrofit is working as designed) • Quantification (e.g., use drainage area and rainfall information to calculate estimated load reduction) • Monitoring (e.g., collect special study information to collect concentrations and flows to estimate load reduction) • Tabulation (e.g., amount of money spent on implementation and maintenance, amount of money spent on educational materials) • Reporting (e.g., estimates of load reduction from 3rd party data)
Assessment Measures, Assessment Outcome Levels & Data:	<ul style="list-style-type: none"> • Number of inspections (Outcome Level 1) • Change (%) in load reduction pre and post-implementation (Outcome Level 4) • Number of educational information items passed out (Outcome Level 1) • How much money spent on inspections and maintenance (Outcome Level 1) • Literature review or other information to provide data to estimate load reductions (Outcome Level 3) • Dataset of load contributions for specific activities (Outcome Level 4)

TITLE: Public Service Announcements: *Karma* and *Karma Second Chance*
ID NUMBER: MB-2001

ACTIVITY DESCRIPTION

The City's Storm Water Division has retained a contract with a film production company to create two Public Service Announcements (PSAs) specifically focused on bacteria, with gross pollutants (trash) profiled as a vector. The PSAs are entitled, *Karma* and *Karma Second Chance*, and the goal of the PSAs is to educate the public about causes of pollution and to encourage positive behavioral change. These PSAs were developed in FY 2007 and FY 2008 and will be broadcast on several television and radio stations throughout the Mission Bay & La Jolla WMA in FY 2008 and beyond. The PSAs will be broadcast in both English and Spanish.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate completion of production in FY 2008, and then will work with various broadcast media outlets to distribute and air the PSAs in FY08 and FY09.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- Various Television and Radios Stations in San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria as a high priority water quality problem in the Mission Bay WMA and recommends implementing load reduction/source abatement activities to address it. The *Karma* and *Karma Second Chance* PSAs will result in increased knowledge and awareness directly, future load reduction of trash and debris directly, and future load reduction of bacteria indirectly.

EXPECTED BENEFITS

The PSAs address bacteria directly by focusing on pet waste, food waste, and organic matter, and indirectly by removing a bacterial source: trash. Literature published by the United States Environmental Protection Agency on its website¹ states that pathogens are microscopic organisms like bacteria and viruses. They come from untreated or poorly treated sewage, pet and farm animal waste, and improperly handled medical waste. Pathogens in the water in unsafe amounts result in beach closures; shellfish bed closures, fish kills, and human health problems.

¹ <http://www.epa.gov/owow/oceans/debris/>

EFFECTIVENESS MEASUREMENTS

PSA effectiveness will be measured on a variety of levels, to include the number of households (television) or listeners (radio) reached by the program which will be tabulated. Second, awareness and attitude data will be collected via surveys. Third, once the PSAs have aired, additional surveys will be conducted to assess changes in knowledge and/or behavior. Recipients responding to and participating in the survey will also be assessed, such as volunteers, or those who agreed to commit to the project.

TITLE: Mobile Advertising
ID NUMBER: MB-2002

ACTIVITY DESCRIPTION

The City's Storm Water Division has retained a contract with a mobile advertising company to advertise Think Blue messages on its static billboard trucks in the Mission Bay & La Jolla WMA. The City intends to create advertisements that target behaviors associated with bacteria and/or metals. The goal of the billboards is to educate the public about causes of these kinds of pollution and to encourage positive behavioral change. These advertisements will be developed in FY 2008, and will be displayed throughout the Mission Bay & La Jolla WMA in both English and Spanish.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

The City will coordinate with its Print Services department in the design of the advertisements and will work with the company retained to have the advertisements created and placed on the company's static billboard trucks. The trucks will drive pre-determined routes in the Mission Bay & La Jolla WMA in an effort to reach targeted, high priority areas within the watershed to increase awareness and promote behavior change.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- None

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Metals

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria and metals as high priority water quality problems in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address them. Utilizing the static billboard trucks will result in increased knowledge and awareness directly and will promote behavior change.

EXPECTED BENEFITS

The billboard advertisements will address bacteria and/or metals to increase knowledge awareness and promote behavior change.

EFFECTIVENESS MEASUREMENTS

Advertisement effectiveness will be measured through the total number of residents reached (based on traffic routes and GPS tracking) as well as via Citywide telephone surveys and focus groups comprised of residents in the Mission Bay & La Jolla WMA.

TITLE: La Jolla Community-Based Social Marketing
Outreach Pilot Project
ID NUMBER: MB-2003

ACTIVITY DESCRIPTION

The City's Storm Water Division found that research indicated that an emerging public education field called Community Based Social Marketing (CBSM) has been used successfully to increase knowledge and change behaviors in environmental sustainability programs throughout the United States. CBSM is a relatively new area of environmental social science that relies heavily on the scientific method, which includes comprehensive research, pilot programs, data gathering, and assessment measures. The City has implemented a pilot project using this approach in the La Jolla community to attempt to achieve awareness and behavioral change. The City has retained several professional research consultants to develop and initiate the CBSM pilot project. Research, observations, and surveys are currently underway, with outreach interventions and assessment methods in development. These efforts will result in recommendations for education/outreach strategies, which may include structural interventions, public participation, incentives and specific messaging.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

In FY 2008, the City will retain and consult with several research consultants, including at least one firm that specializes in CBSM. Research, planning, and outreach implementation will occur in FY 2008, with outreach continuing into FY 2009. Implementation, assessment and evaluation will also continue to occur in FY 2009.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper
- Scripps Institution of Oceanography
- University of California, San Diego

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria as a high priority water quality problem in the Mission Bay & La Jolla WMA and recommends implementing load reduction/source abatement activities to address it. This CBSM effort will target potential sources of bacteria and devise and implement strategies to address them.

EXPECTED BENEFITS

The CBSM pilot project addresses bacteria indirectly by removing two bacterial sources: pet waste and trash. Literature published by the United States Environmental Protection Agency on its website¹ states that pathogens are microscopic organisms like bacteria and viruses. They come from untreated or poorly treated sewage, pet and farm animal waste, and improperly handled medical waste. Pathogens in the water in unsafe amounts result in beach closures; shellfish bed closures, fish kills, and human health problems.

EFFECTIVENESS MEASUREMENTS

CBSM pilot project effectiveness in La Jolla will be measured on a variety of levels. First, the number of stakeholders, residents, and business being reached by the efforts will be tabulated. Second, awareness, attitude and behavioral data will be collected via surveys and observations. Third, once the outreach strategy has been implemented, another survey will be conducted to assess changes in knowledge and/or behavior. Recipients responding to and participating in the survey will also be assessed, such as volunteers, or those who agreed to commit to the project. Finally, tests such as water monitoring will be conducted to assess if any load reductions are achieved.

¹ <http://www.epa.gov/owow/oceans/factsheets/fact1.html>

TITLE: Genesee Avenue Business Community - Based Social Marketing Outreach Pilot Project

ID NUMBER: MB-2004

ACTIVITY DESCRIPTION

The City's Storm Water Division found that research indicated that an emerging public education field called "Community Based Social Marketing" (CBSM) has been used successfully to increase knowledge and change behaviors in environmental sustainability programs throughout the United States. CBSM is a relatively new area of environmental social science that relies heavily on the scientific method, which includes comprehensive research, pilot programs, data gathering, and assessment measures. The City plans to implement a pilot project using this approach along Genesee Avenue in the Clairemont community of the Mission Bay Watershed Management Area with the goal of achieving awareness and behavioral change among businesses. The City has retained several professional research consultants to develop and initiate the CBSM Pilot Project. Research, observations, and surveys will be conducted, with outreach interventions and assessment methods to follow. Potential results will include recommendations for education and outreach strategies, which may include education, structural interventions, public participation, incentives and specific messaging.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

In Fiscal Year 2009, the City will retain and consult with several research consultants, including at least one firm that specializes in Community-Based Social Marketing. Research and planning will occur in FY09, with implementation, outreach, assessment and evaluation continuing through FY 2011.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria and trash as high priority water quality problem in the Mission Bay WMA and recommends implementing load reduction/source abatement activities to address it. This effort will target potential sources of bacteria and trash and devise and implement strategies to address them.

EXPECTED BENEFITS

The Community-Based Social Marketing (CBSM) Outreach Pilot will address bacteria indirectly by removing bacterial sources observed in the Watershed, which may include trash and restaurant debris. Literature published by the United States Environmental Protection Agency on its website¹ states that *pathogens* are microscopic organisms like bacteria and viruses. They come from untreated or poorly treated sewage, pet and farm animal waste, and improperly handled medical waste. Pathogens in the water in unsafe amounts result in beach closures; shellfish bed closures, fish kills, and human health problems.

EFFECTIVENESS MEASUREMENTS

CBSM Pilot Project effectiveness will be measured on a variety of levels. First, the number of stakeholders, residents, and business being reached by the program will be tabulated. Second, awareness, attitude and behavioral data will be collected via surveys and observations. Thirdly, once the outreach strategy has been implemented, another survey will be conducted to assess changes in knowledge and/or behavior. Recipients responding to and participating in the survey will also be assessed, such as volunteers, or those who agreed to commit to the project. Finally, tests such as water monitoring will be conducted to assess if any load reductions are achieved.

¹ <http://www.epa.gov/owow/oceans/factsheets/fact1.html>

TITLE: Mt. Abernathy Green Street Outreach
ID NUMBER: MB-2005

ACTIVITY DESCRIPTION

Mt. Abernathy Green Street Outreach will be to support the planned “Green Street” construction in a small sub-section of the Clairemont community in the Mission Bay Watershed Management Area. Construction will include modifying the vegetated planter areas between the curb and sidewalks in front of residential homes in order to better infiltrate runoff. Sidewalks and cul-de-sacs may also be retrofitted with porous paving. The City plans to inform, educate and involve residents who are directly affected by the construction in an attempt to achieve awareness regarding storm water runoff and to create behavioral change among residents. The City has retained several professional outreach consultants to assist, develop and initiate the public participation and education campaign. Activities will include recommendations for education and outreach strategies, which may include education, structural interventions, public participation, incentives and specific messaging.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

In Fiscal Year 2009, the City will retain and consult with several outreach consultants, including at least one firm that specializes in Community Outreach. Planning will occur in FY09, with implementation, outreach, and evaluation continuing through FY 2011.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- San Diego Coastkeeper

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria
- Gross Pollutants (Trash)

CONSISTENCY WITH THE WATERSHED STRATEGY

The City’s Strategic Plan identifies bacteria and trash as high priority water quality problem in the Mission Bay WMA and recommends implementing load reduction/source abatement activities to address it.

EXPECTED BENEFITS

The Mt. Abernathy Greet Street Outreach will address bacteria indirectly by removing bacterial sources observed in the WMA, which may include trash, pet waste and other debris. Literature

published by the United States Environmental Protection Agency on its website¹ states that *pathogens* are microscopic organisms like bacteria and viruses. They come from untreated or poorly treated sewage, pet and farm animal waste, and improperly handled medical waste. Pathogens in the water in unsafe amounts result in beach closures; shellfish bed closures, fish kills, and human health problems.

EFFECTIVENESS MEASUREMENTS

Outreach effectiveness will be measured on a variety of levels. First, the number of stakeholders, and residents being reached by the program will be tabulated. Second, awareness, attitude and behavioral data will be collected via surveys, interviews and observations. Third, once the outreach strategy has been implemented, future surveys may be conducted to assess changes in knowledge and/or behavior. Recipients responding to and participating in the survey will also be assessed, such as volunteers, or those who agreed to commit to the project. Finally, tests such as water monitoring will be conducted to assess if any load reductions are achieved.

¹ <http://www.epa.gov/owow/oceans/factsheets/fact1.html>

TITLE: Tecolote Creek Bacterial Source Identification Study
ID NUMBER: MB-3001

ACTIVITY DESCRIPTION

This activity will involve the identification of bacterial sources in the Tecolote Creek Watershed through wet and dry weather monitoring surveys including visual observations, spot sampling, and laboratory analysis of data accumulated through monitoring. The study will focus on locating primary sources of high bacterial loading and identify if human contamination is a contributing factor. This study will also provide specific recommendations for source control and pollution prevention/reduction based on the conclusions of the analysis.

TMDL APPLICABILITY

- San Diego Region Beaches and Creeks Bacteria TMDL
- Tecolote Creek Bacteria TMDL

TIME SCHEDULE FOR IMPLEMENTATION

Sampling and monitoring associated with this activity began in August 2007 and will continue through April 2008. Data analysis and reporting will begin once monitoring concludes, and the final report is anticipated to be completed in July 2008.

PARTICIPATING WATERSHED COPERMITTEE(S)

- City of San Diego

OTHER PARTICIPATING ENTITIES

- N/A

HIGH PRIORITY WATER QUALITY PROBLEM(S) ADDRESSED

- Bacteria

CONSISTENCY WITH THE WATERSHED STRATEGY

The City's Strategic Plan identifies bacteria as a high priority water quality problem in the Mission Bay & La Jolla WMA. Identification of the sources of bacteria in the WMA will help the City focus its efforts in abating sources and implementing activities that reduce pollutant loading.

EXPECTED BENEFITS

The study will help the City pinpoint how bacteria is loaded into receiving waters in the Tecolote Watershed and will provide specific management, BMP recommendations, and implementation strategies for reducing bacteria loading at the identified sources.

Appendix D

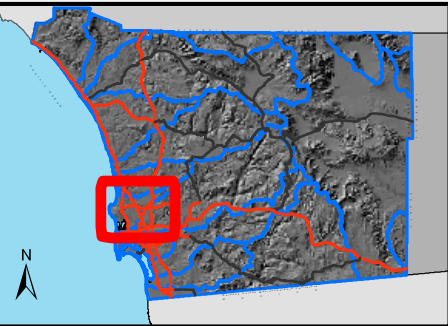
Watershed Management Area Maps

SAN DIEGO BAY
WATERSHED MANAGEMENT AREA
Municipal Separate Storm Sewer System
Map (MS4)

Legend

- Watershed Management Areas
- Sub-Basins
- 303(d) Waters (2006)****
- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs
- (MS4) Airport Authority Storm Drain Structures
- (MS4) Airport Authority Storm Drain Line
- (MS4) Chula Vista Junctions
- (MS4) Chula Vista Mains
- (MS4) Coronado (All Structures)
- (MS4) Coronado Lines and Force Lines
- (MS4) County Culverts
- (MS4) County Open Flood Control Channels
- (MS4) County Open Channels
- (MS4) County Open Channels
- (MS4) County Flood Control Facilities
- (MS4) Imperial Beach Appurtenances
- (MS4) Imperial Beach Drainlines
- (MS4) La Mesa Storm Drain Network
- (MS4) La Mesa Storm Drain Nodes
- (MS4) National City Storm Drain Structures
- (MS4) National City - Box Culvert
- (MS4) National City - Ditch
- (MS4) National City - Open Channel
- (MS4) National City - Pipe
- (MS4) Port - Inlets, Outlets, and Manholes
- (MS4) Port Pipe
- (MS4) Port Slit Trench
- (MS4) Port Open Channel
- (MS4) Port Other
- (MS4) San Diego Drain Structures
- (MS4) San Diego Drain Channels and Pipes

Data Sources:
MS4: Various jurisdictions (2007);
**303(d) Waters / Watersheds: (SWRCB), (2006)
Disclaimer:
The 2006 303(d) List GIS shape files and associated 303(d) list excel tables containing the information shown on the list are provided on this State Water Resources Control Board website for public use. These GIS representations of the areal extent of affected waters are estimated and should not be considered authoritative for the development of TMDLs (Total Maximum Daily Load) or other regulatory actions. The TMDL effort may ultimately address more or less areal extent than shown in these GIS files. Mapping the 303(d) listed waters is a work in progress and will be updated during each listing cycle to better define the impacted areas.

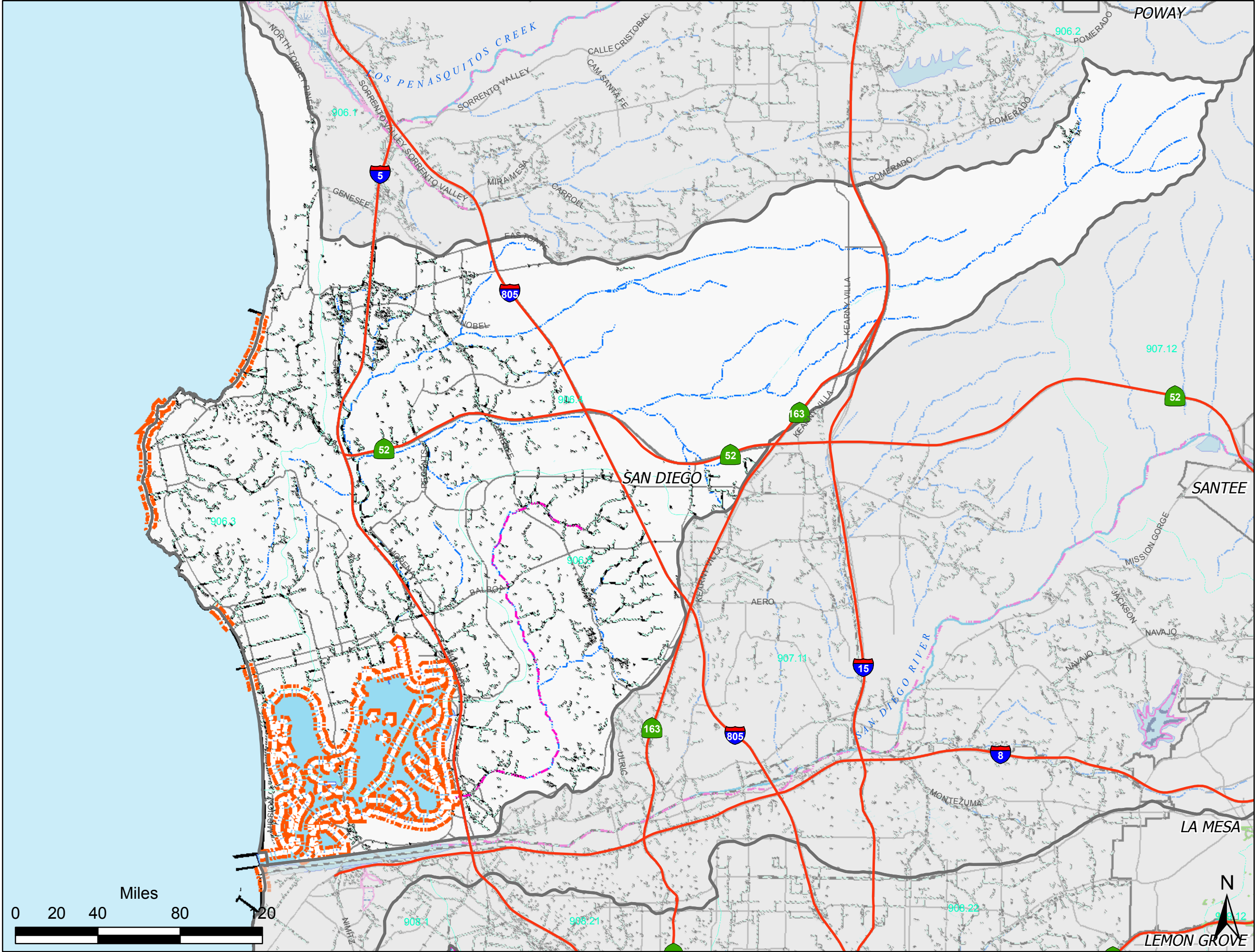


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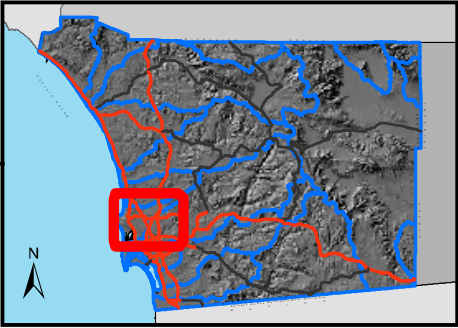


MISSION BAY
WATERSHED MANAGEMENT AREA
Land Use Map

- Legend**
- Watershed Management Areas
 - Sub-Basins
 - 303(d) Waters (2006)****
 - Water Body Type**
 - Coastal Shorelines
 - Rivers/Streams
 - Bays and Harbors
 - Estuaries
 - Lakes/Reservoirs
 - Major Roads
 - Lakes
 - Rivers
 - Creeks
 - Streams

- SANDAG Land Use (Comp 06)**
- Existing Land Use**
- Spaced Rural Residential
 - Residential
 - Institution
 - Military
 - Commercial and Office
 - Industry
 - Transportation, Communication, Utilities
 - Commercial Recreation
 - Parks
 - Agriculture
 - Undeveloped
 - Water
 - Incorporated Area

Data Sources:
Land Use: SANDAG (2006);
**303(d) Waters / Watersheds: (SWRCB). (2006)
Disclaimer
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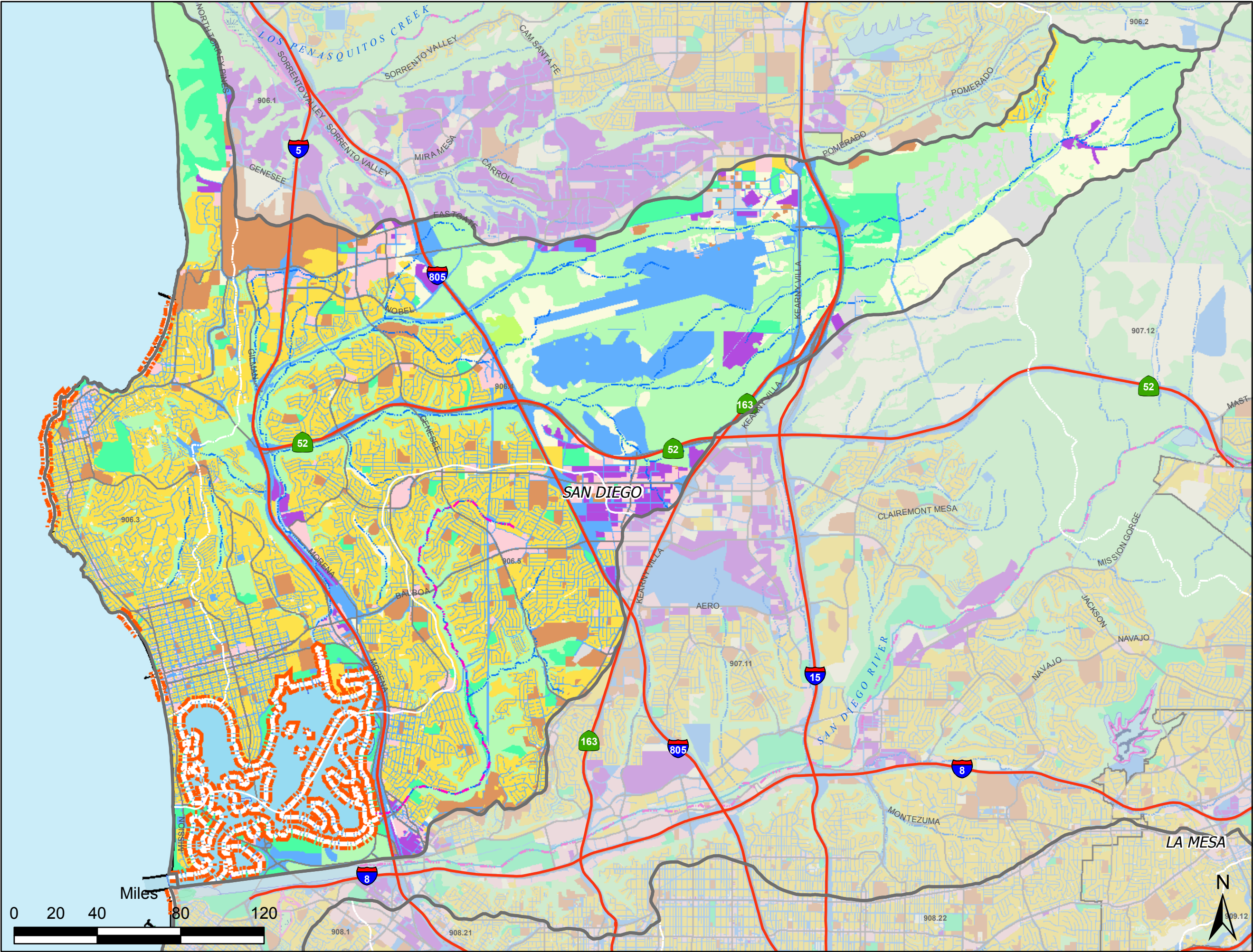


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MISSION BAY
WATERSHED MANAGEMENT AREA

Pollutant Source Map

Legend

- Watershed Management Areas
- Sub-Basins

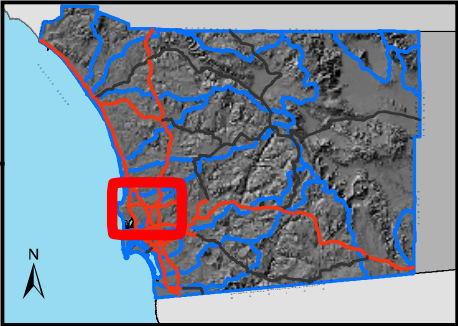
Long-Term Effectiveness Assessment Data
Source Loading Potential - (ALLSOURCES)

- Airfield
- AirplaneRepair
- Animal Facilities
- AutoPaint
- AutoRepair
- BoatRepair
- Cemetery
- Food
- Fuel
- GolfCourses
- LandApplication
- Landfill
- MaintenanceYard
- Marina
- Nursery
- POTW
- Paintball
- SolidWasteTransfer

303(d) Waters (2006)**

- Coastal Shorelines
- Rivers/Streams
- Bays and Harbors
- Estuaries
- Lakes/Reservoirs
- Major Roads
- Lakes
- Rivers
- Creeks
- Streams
- Incorporated Area

Data Sources:
Businesses / Monitoring Stations: Long Term Environmental Assessment (County of San Diego / Ogawa Engineering)
**303(d) Waters / Watersheds: (SWRCB), (2006)
Disclaimer:
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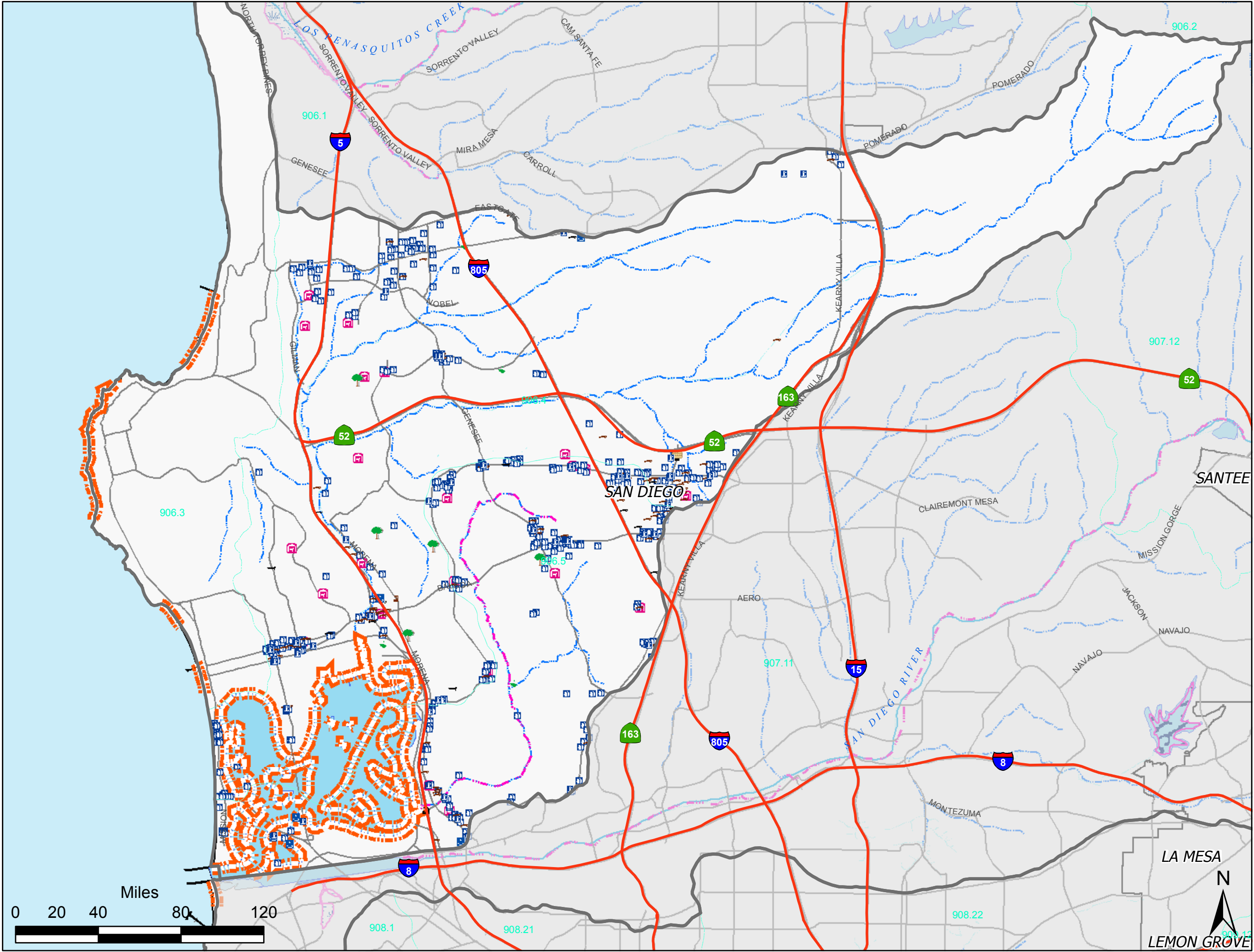


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Appendix E

Annual Reports

(To Be Provided in Future Fiscal Years)